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MEDICAL BOTANY:

OR,

ILLUSTRATIONS AND DESCRIPTIONS

OF THE

Medicinal Plants

OF THE LONDON, EDINBURGH, AND DUBLIN PHARMACOPŒIAS;

COMPRISING

A POPULAR AND SCIENTIFIC ACCOUNT OF ALL THOSE

POISONOUS VEGETABLES

THAT ARE INDIGENOUS TO GREAT BRITAIN.

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Syngenesia Polyg. Aequalis
Leontodon Taraxacum v. *Erag.* *Compositae* *Compositae*
Lactuca Virora *do* *do* *Compositae* *Semiflorae*
Sativa *do* *do*

Syngenesia Polygami: Superflua
Artemisia Absinthium *do* *do* *Compositae* *Uncoides*
Santonica *do* *do*
Abrotanum *do* *do*
Maritima *do* *do*
Tanacetum Vulgare *do* *do*
Arnica Montana *do* *do*
Inula Helenium *do* *do*
Solidago Virgaurea *do* *do*
Odora *do* *do*
Anthemis Nobilis *do* *do*
Pyrethrum *do* *do*
Tussilago Farfara *do* *do* *Compositae* *Radiatae*

Syngenesia Polygami: Frustranea
Centaurea Benedicta *do* *do* *Compositae* *Capitatae*

Gynandria Hexandria
Aristolochia Serpentaria *do* *Aristolochia* *Sarmentacea*

Monocia Diandria
Dorstenia Contrayerva *do* *Monoclea* *Scabida*

Monocia Tetrandria
Morus Nigra *do* *Artocarpus* *Scabida*

Monocia Pentandria
Bryonia Dioica *do* *Cucurbitaceae*

Monocia Polyandria
Aium Maculatum *do* *Piperites*

Quercus Robur *do* *Cupuliferae* *Amentaceae*
Infectoria *do* *do*

Monocia Monadelphica
Pinus Sylvestris *do* *Coniferae*

Balsamea *do* *do*
Abies *do* *do*
Larix *do* *do*

Euphorbia *do* *Euphorbiaceae*
Eclipta *do* *do*

Ricinus Communis *do* *do*

Momordica Elatium ^{so} Cucurbitaceae

Monocia Syngenesia

Cucumis Colocynthis ^{so} Cucurbitaceae

Diocia Diandria

Salix Kapeliana ^{so} Salicaceae Samentaceae

— Fragilis ^{so} ^{so}

— Alba ^{so} ^{so}

— Laprea ^{so} ^{so}

Diocia Pentandria

Humulus Lupulus ^{so} Urticeae Scabido

Pistacia Terebinthus Samentaceae

— Lentiscus

Diocia Hexandria

Smilax Lapsuifolia V. Ind: Smilacaceae Samentaceae

Cocculus Palmatus V. Ind: Menispermaceae

Diocia Enneandria

Mercurialis Perennis Tricocco

— Annua

Diocia Monadelphina

Juniperus communis ^{so} Coniferae

— Sabina ^{so} ^{so}

Myristica Moschata ^{so} Myristicaceae Lami

Polygamia Monocia

Veratrum Album V. Ind: Melanthaceae Coronariae

Acacia Fatchu ^{so} Leguminosae Somentaceae

— Vera ^{so} ^{so}

Polygamia Diocia

Fraxinus Ornus ^{so} Oleaceae Sepiariae

Polygamia Triocia

Ficus Larica ^{so} Moraceae Scabido

Cryptogamia Alga

Rocella Tinctoria Alga

Cetraria Islandica

Fucus Vesiculosus

— Helminthoceros

Cryptogamia Fungi

Amarula Muscaria Fungi

Agaricus Semi globatus

— Bulbosus





Scutellon . Taraxacum ?

LEONTODON TARAXACUM.

*Common Dandelion.**Class XIX. SYNGENESIA.—Order I. POLYG. ÆQUALIS.**Nat. Ord. COMPOSITÆ, Lin. CICHORACEÆ, Juss.***GEN. CHAR.** *Receptacle naked. Calyx double. Pappus stipitate, hairy.***SPEC. CHAR.** *Leaves runcinate, glabrous, toothed; outer scales of the calyx reflexed.**Syn.—Dens leonis. Raii. Syn. 170. 1; Camer. Epit. 286. f.; Ger. Em. 290. 1.; Park. 780; Matth. Valgr. v. 1. 461. f.**Hedypnois Taraxacum. Scop. Carn. II. n. 957.**Leontodon Dens leonis. Lamarck Ency. Method. 3. 349.**Taraxacum officinale. Villars Dauph. 3. 72.**Leontodon vulgare. Lamarck Fl. Franc. 2. 113.**Leontodon officinalis. Withering Bot. Arr. ed. 4. 679; Hull. 173.**Leontodon Taraxacum. Lin. Sp. Pl. 1122; Willd. v. 3. 1544; Smith Fl. Brit. 822; Curt. Lond. t. 58; Woodv. t. 3.***FOREIGN APPELLATIONS.**—*Dent de Lion; Pissenlit, Fr.; Tarassaco, It.; Cardillos tagarnina, Sp.; Lowenzahn wurzel, Ger.*

THIS is a well known perennial inhabitant of our meadows, pastures, and gardens, generally despised as a troublesome weed; it flowers from April till late in autumn.

The root is spindle-shaped, white and fleshy within, and covered externally with a brown epidermis. All the leaves spring from the root; they are numerous, spreading, smooth, of a bright green, tapering towards the root and runcinate, or deeply cut into sharp lobes, unequal, and pointing downwards. The stem, or as it is termed in botanical language, scape, is erect, round, smooth, very brittle, tubular, and terminated by a single flower of a golden yellow colour, which expands in fine weather only, and closes in the evening. The common calyx is

imbricated and oblong. The proper flower is composed of very numerous monopetalous, equal, ligulate, truncated, five-toothed florets. The five filaments are capillary and slender, with tubulose antheræ. The germen is obovate, crowned with a slender cylindrical style, and furnished with two revolute stigmas. The receptacle, to which the seeds are attached, is convex and dotted. The seeds (*a*) are solitary, oblong, scabrous; and supporting a radiated pappus, on a long pedicel.—Fig. (*b*) is a floret somewhat magnified, showing the germen and five united anthers surrounding the forked style.*

DISTINCTIVE CHARACTER.—*Leontodon palustre*, Marsh Dandelion, which is regarded by some as a distinct species, and by others merely as a variety, may be distinguished from *L. Taraxacum*, by its having the outer scales of the calyx shorter, and not reflexed; by the leaves being less runcinate, and the flower and whole plant smaller and more slender. In its sensible

* As the young botanist generally finds some difficulty in acquiring a clear and precise idea of the structure of the compound flowers, occasioned by the minuteness of the parts of fructification, which are however much larger and more conspicuous in this than in many others of the class Syngenesia, we have taken the liberty to transcribe the following observations from Curtis's *Flora Londonensis*, for the sake of illustration. "On examining," says Mr. Curtis, "the flower of the Dandelion, he will find that it is not a double flower, properly so called, as he might be led to think from its fulness; but that it is composed of a great number of *flosculi* or lesser flowers, placed close together, on one common receptacle or bottom, and enclosed by one common or general calyx. On dissecting each of these *flosculi*, he will find them to consist of a *corolla*, or petal, which at bottom is tubular, but towards the extremity flat; that from the bottom or tubular part of the corolla, five *filaments* spring, which are small and short, yet loose and unconnected; thus these filaments are furnished with *antheræ*, which unite together, and form a slender tube. Beneath the corolla is placed the *germen*, or future seed, from whence the *style* or middle part of the *pistillum* proceeds, and passes up through the middle of the flower, betwixt the *filaments*, and through the tube formed by the union of the *antheræ*, and is furnished at the top with two *stigmata* which roll back. At a little distance from the *germen*, the lower part of the *style* is surrounded by numerous upright hairs, which are the future *pappus* or *down*. This down, he will find to be the appearance of the parts of fructification, in a full blown flower."

"Those parts of the flower which were more immediately, or more remotely necessary to the impregnation of the seed, having now performed their office, decay; the *corolla* with the *stamina* and upper part of the *pistillum* drops off; the seed becomes larger, the lower part of the pistillum remains, is elongated, and becomes the *footstalk* of the *pappus*; and the seed as yet immature, with the pappus as yet moist, are all enclosed and pressed by the *calyx* into a conical form. This is the appearance of the second state. The fructification still going forward, the *seed* becomes ripe and brown. The *pappus* now deprived of its moisture, expands itself in every way; pushes back the calyx, and assumes a spherical form. The seeds fitted for vegetation, and thus exposed, are carried away by the first strong wind, and a 'new race planted far from their native soil.'"

qualities it agrees with the preceding species; the distinction, therefore, in a medical point of view, is not very important.

The term *Leontodon*, is derived from *λεων*, a lion, and *οδους*, tooth, and is so called from the indentments of the leaves, which have been fancifully compared to the jaw or teeth of a lion. Linneus bestowed this name upon the genus, in preference to the compound one of *Dens-Leonis*, which had been given by Tournefort; and *Taraxacum* is said to be an Arabian corruption of *τροξιμον*, *edule*, one of the names of Ceres. From the receptacle looking bald, after the flowers and seeds are gone, it is sometimes called *Monkshead*; while, by the French, it is termed *pissenlit*, from its diuretic properties, and has obtained in this country a vulgar designation expressive of the same powers. The English name *Dandelion* appears to be a corruption of *Dent de lion*.

QUALITIES AND CHEMICAL PROPERTIES.—The plant is nearly inodorous, and its taste is somewhat bitter, and sweetly acidulous. Although it yields but little of its virtues either to alcohol or ether, (water being the best menstruum,) it has been found on analysis to contain caoutchouc. *Infusion of galls, nitrate of silver, oxymuriate of mercury, acetate of lead, and sulphate of iron, precipitate its decoction,* and are therefore incompatible with it. The milky juice is supposed to contain tartaric acid, as it reddens the vegetable blues; and it is probable, remarks Dr. A. T. Thomson, that the active principles of *taraxacum* are, extractive, gluten, a bitter principle which does not appear to be resinous, and tartaric acid, either free, or as a supertartrate.

MEDICAL AND ŒCONOMICAL USES.—*Dandelion* is moderately aperient, and diuretic; the whole of the plant possessing these properties; which are most active in the roots. As a domestic medicine it is often administered with superstitious expectations; PARK, an old English author, remarking, “whoso is macilent, drawing towards a consumption, or ready to fall into a cachexy, by the use hereof for some time together, shall find a wonderful help.” Many authorities might be quoted in its favour, but like most of our indigenous medicines it is seldom prescribed.

Dr. Pemberton, however, recommended it for visceral affections, and Dr. Good states, "that its obvious character is that of increasing the flow of urine." Boerhaave, also, had a high opinion of its powers, and esteemed it capable, "if duly continued, of resolving obstinate obstructions and coagulations of the viscera:" and having directed our attention to it for several years, we are persuaded that his conclusions are not altogether incorrect. Where the stomach is irritated by its own secretions, arising from chronic inflammation affecting some of the abdominal viscera, especially the liver; and where active treatment would be injurious, the decoction of *Taraxacum*, or the extract, administered three or four times a day, will often prove a valuable remedy. In habitual costiveness, the result of a long residence in hot climates, dandelion is a most efficient medicine; for instead of impairing the constitution further, by producing a purgative action that it may be difficult to control, it assists the bowels in performing their functions, and constrains them mildly and regularly to perform them: and Dr. James Johnson ranks it amongst those agents, that possess the power of preventing the formation of biliary concretions, by keeping up a due and healthy secretion in the liver. As an adjuvant to other more active remedies, it may be prescribed with advantage in dropsical cases, and for induration of the liver; while by our continental neighbours, it is recommended for pulmonic tubercles, and some cutaneous diseases. When its diuretic effect is required, supertartrate of potass may be combined with its decoction or infusion. We have not discovered any narcotic powers from its administration, although they generally reside in the lactescent plants.

It is a fact well known to gardeners, that plants, when blanched, lose many of their active properties; and dandelion thus prepared, is frequently eaten on the continent in salads;* and sometimes by the lower class of people in this country, in its native state; while at Gottingen, the roots are roasted and used by the poor for coffee, a decoction of which properly pre-

* In agro Pariensi frequens ubique nascitur, et in hortis colitur. *Geoff.* iii. 399.

pared, can hardly be distinguished from the real. The French eat the young roots, and the etiolated leaves, with thin slices of bread and butter ; and it is stated, that the inhabitants of Minorca, subsisted on this root, after a swarm of locusts had destroyed the fruits of the earth. Miller remarks, that “ goats eat it, swine devour it greedily, sheep and kine are not fond of it, and horses refuse it.”

PREPARATIONS.—Lewis justly remarks, that “ neither the plant in substance, nor its preparations, bear keeping well ; the dried root and its extract losing their bitterness.” The extract, indeed, as it is usually made, can scarcely be supposed to have much power, and to the badness of the preparation may be attributed its want of success in many cases. Having seen the extract prepared by a scientific friend, Joseph Houlton Esq. F.L.S. we do not hesitate to affirm, that it possesses *all* the virtues of the plant ; and to him we are indebted for the following communication. “ I have great pleasure in sending you an account of my method of preparing the *Extractum Leontodinis Taraxaci*, which is as follows :—

“ At the beginning of autumn, take of the recent roots of Dandelion four pounds, let them be well bruised in a marble mortar, and the juice expressed ; which set aside. Moisten the pressed roots with two pints of water, bruise them again, and press off the fluid. Then boil the roots, in as much water as may be sufficient, for an hour ; press off the decoction ; set it aside to cool ; then pour it off from the fœces, and mix it with the fluid resulting from the second pressing. Carefully evaporate it with a gentle heat to the consistency of syrup ; when cool, let it be intimately mixed with the juice procured by the first pressing ; let the extract be now exposed in shallow earthen vessels, (common table dishes, or plates will answer the purpose,) until it acquire a stiff pill consistence. If it be left too moist, chemical changes will take place in it, producing acidity.

“ Extract of dandelion, prepared in the manner detailed above, I have used *uncombined* in icterus, and in various chronic morbid affections of the digestive organs, with the most decided efficacy. The treacle-like trash, sold under the name of *Extractum Taraxaci*,

I have ever found to be an inert article. I am inclined to judge favourably of the extract prepared by Allen in vacuo: it agrees in its sensible properties with the extract that I make, but it is more liable to become decomposed, from being a moister preparation.

“ The most usual modes of exhibition.

“ R Ext. Leontod. Taraxaci ʒj.

“ In pilul. duodecim divid., quarum tres ter in die dentur.

“ R Ext. Leontod. Taraxaci ʒj.

Potassæ Sulphat. ʒj.

Syrup. Simplic. q.s. ut ft. Massa,

in pilulas æquales triginta dividenda: Tres ter in die dentur.”

Mr. Sprague, of Solihull, near Birmingham, whose contributions on pharmacy are well known to the readers of “ the London Medical Repository,” has given to us the following select formulæ, which he states to be very effectual means of exciting the secretion of the kidneys, in anasarca and ascites:—

R Extract. Taraxaci, ʒss.

Decoct. Taraxaci, (Ph. Dub. 1826) ʒix.

Spirit. æther. nitr. ʒi.

Syrupi zingiberis. ʒij.

M. ft. Haustus, ter in die capiendus.

R Potassæ Supertart. ʒij.

Caryophyl. contus. ʒij.

Sacchari purif. ʒi.

Decoct. Taraxaci (Ph. D.) ℥j.

Macera per horas duas et cola.

Dose, a fourth part every six hours.

OFF. PREP.—Extractum Taraxaci. *L. D.*



Lactuca virosa.

LACTUCA VIROSA.

Strong-scented Lettuce.

Class XIX. SYNGENESIA.—Order I. POLYGAMIA
ÆQUALIS.

Nat. Ord. COMPOS. SEMIFLOSC., Lin. CICHORACEÆ, Juss.

GEN. CHAR. *Receptacle* naked. *Calyx* imbricated, cylindrical; its scales membranaceous at their margins. *Pappus* simple, stipitate.

SPEC. CHAR. *Leaves* horizontal, toothed; the keel prickly.

Syn.—*Lactuca sylvestris*, odore opii. *Raii Syn.* 161; *Ger. Em.* 309. *f.*

Lactuca. n. 15. *Hall. Hist.* v. 1. 7.

Lactuca agrestis. *Cord. Hist.* 157. 2. *f.*; *Lob. Ic.* 241. *f.*

Lactuca virosa. *Lin. Sp. Pl.* 1119; *Willd.* v. 3. 1523; *Eng. Bot.* v. 28. t. 1957.

FOREIGN.—*Latuite vireuse*, Fr.; *Lattuca Salvatica*, It.; *Wilder Lattich*, Ger.

THIS is a biennial plant; a native of Britain, and other parts of Europe; occurring chiefly in dry warm hedges, and waste grounds, where the soil is calcareous. We perceived it in the hedges about Kilburn, on the road to Harrow; in Maiden-lane, near Copenhagen House; at Kingston-bottom, near Coombe Wood, Surrey, and other places near London.

The stem is somewhat woody, rising from two to six feet high; it is erect, slender, very slightly prickly below, smooth above, round, paniced, and thinly clothed with leaves. The leaves are alternate, glabrous, toothed, undivided at the base, and spreading; the cauline ones amplexicaul, sinuate, sometimes lobed, with the midrib armed with short spines on the

under side. The bracteas, or floral leaves, are cordate, and pointed. The flowers, which expand only in bright sunny mornings, are small, compound, of a sulphur-yellow colour, and appear in terminal panicles, in August and September. The calyx is nearly cylindrical, and composed of numerous pointed scales, with membranous edges. The corolla is compound, imbricated, and uniform; the florets equal, monopetalous, ligulate, truncated, and four or five-toothed. There are five very short capillary filaments, having the anthers united into a cylindrical tube. The germen is nearly ovate, supporting a slender style, the length of the stamens, with two reflexed stigmas. The seeds are solitary, ovate, compressed, striated, brownish black, and furnished with a pedicellate scabrous pappus.—Fig. (a) represents a floret with the five united anthers, somewhat magnified; (b) a single seed with the pappus.

The systematic name, *Lactuca*, from *lac*, milk, is obviously expressive of the milky juice with which the plants of this genus generally abound. *Virosa*, the trivial name, poisonous, alludes, no doubt, to its supposed deleterious properties.

QUALITIES AND CHEMICAL PROPERTIES.—The leaves and stem of this plant abound with a milky juice, which may be collected in great abundance, just as it is beginning to flower: in the same manner as that recommended by Mr. Jeston, of Henley-upon-Thames, for English opium.* Sir. J. Hill recommends it to be practised in the month of April, which is certainly too early: and Dr. Todd Thompson says that the plant must be gathered, and the *juice expressed*; a plan we consider to be objectionable, as the other fluids must necessarily be mixed with the white juice: which is of a strong foetid smell; of a bitter and acrid taste; and possesses the active powers of the plant.

POISONOUS EFFECTS.—Two drachms of the watery extract were applied, by M. Orfila, to the cellular texture of the back of a dog. At the end of two days, the animal, who had only been slightly drowsy, had some vertigoes, and died seventy hours after the operation. The ventricles of the brain contained no fluid; the exterior veins of that organ were distended and injected with black blood: the lungs presented a few patches of a brownish red colour, and their texture was somewhat more dense than natural.

In a dog, who had been poisoned by three drachms of the extract, introduced in the stomach, *dissection* of the body threw no light on the cause of his death: and in a rabbit which died a short time after we had administered half an ounce of the expressed juice, in a fluid state, we could discover no morbid appearances whatever.

* See *Transactions of the Society of Arts*, v. 41. p. 17.

TREATMENT.—The effects of this plant, when taken in an over dose, being decidedly *narcotic*, we again refer to our *Art. ATROPA*, No. I. for the treatment that is required.

MEDICAL PROPERTIES AND USES.—We consider this as one of the most valuable of our native plants: the inspissated juice is a mild sedative, and if administered in proper doses, constitutes an excellent substitute for opium; when its diuretic effects, which are somewhat powerful, are not contra-indicated. It generally proves somewhat laxative; promotes urine and gentle perspiration, and allays thirst. By the Germans its virtues are highly extolled, and they administer it in palpitation of the heart, and in intermittent fever. Dr. Collin relates twenty-four cases of dropsy; twenty-three of which were cured by taking it, in doses of eighteen grains, to three drachms, every twenty-four hours. In a dropsical case, that lately came under our care, it certainly produced a salutary action on the kidneys, and procured quiet sleep. We have also ascertained, to our own satisfaction, that it possesses another most important virtue, viz. *that of reducing the velocity of the pulse*; at the same time that it appears to increase its tone: and so remarkably efficient did it act on one patient, that three small doses of the tincture diminished the arterial action in the wrist from one hundred and twenty pulsations in the minute, to less than seventy; accompanied by intermissions. Unlike *Digitalis*, its effects on the brain are scarcely felt; and as the subject is one of considerable interest, and of no little consequence, we trust that our professional brethren will endeavour to elucidate our remarks, by further investigations.

DOSE. Of the extract six grains, gradually increased.

OFF. PREP. Succus spissatus *Lactucæ virosæ*.

TINCTURA LACTUCÆ VIROSÆ.

R *Lactucæ Virosæ Foliorum* exiccatorum, uncias quatuor;
Spiritus tenuioris, octarios duos;

Macerate per dies quatuor-decem, et cola.—Dosis, gtt. xx ad ʒj.

LACTUCA SATIVA.—*Garden Lettuce.*

SPEC. CHAR. *Leaves* rounded; stem-leaves heart-shaped; stem corymbed.

Syn.—*Lactuca sativa*, *Lin. Sp. Pl.* 1118; *Willd. v.* 3 1523; *Ger. Em.* 306; *Gærtn. Fr.* 2. 362.

FOREIGN.—*Laitue cultivee*, Fr.; *Lattuca*, It.; *Lattich*, Ger.

THE original country of the Garden Lettuce is unknown. By some it is supposed to be an accidental variety sprung from some other species of *Lactuca*. It was cultivated in England, by Turner, in 1562, and probably much earlier. The leaves are large, milky, frequently wrinkled, usually pale green, but varying much in form and colour in the different varieties. The radical leaves are roundish, and toothed at the margin; those of the stem are obovate or heart-shaped. The stem is round, leafy, two or three feet high, and corymbose at the top, with numerous bright yellow flowers, which appear in July.

QUALITIES.—The Garden Lettuce contains, like the other species, a quantity of milky juice; having, when inspissated, the dark colour, and, in some degree, the odour and taste, of opium. The inspissated juice was found by Professor Pfaff to consist of 41 parts soluble in water, 7 of wax, 6 of resin, 18 of caoutchouc, and 8 of loss=80.* It contains a free acid, analogous to the oxalic, but different, and a narcotic principle; but no morphia.†

MEDICAL PROPERTIES AND USES.—The Lettuce is universally esteemed as a cooling and agreeable salad; and the expressed juice has been long known to possess considerable narcotic powers. The spirituous extract, under the title of *lactucarium*, has been strongly recommended by the late Dr. Duncan, in doses of from two to six grains, as a substitute for opium, in pulmonary consumption, and some other diseases.

* Pfaff, *System der Materia Medica nach chemischen principien*, Bd. vi. Leipzig. 1821.

† Caventou, *Journal de Chimie Medicale*, tom. 1, p. 300.



Santonica.

Wanthium.

ARTEMISIA ABSINTHIUM.—*Common Wormwood.*

Class XIX. SYNGENESIA.—Order II. POLYG-SUPERF.

Nat. Ord. COMPOSITÆ, γ , discoideæ, Lin. CORYMBIFERÆ, Juss.

GEN. CHAR. *Receptacle* either naked or hairy. *Seed-down* none. *Calyx* imbricated, with roundish converging scales. *Florets* of the radius subulate, entire.

* * * *Erect, herbaceous.*

SPEC. CHAR. *Leaves* bi- or tri-pinnatifid, clothed with a close silky down; the segments lanceolate. *Flowers* drooping, hemispherical. *Receptacle* hairy.

Syn.—*Absinthium latifolium sive ponticum*, Ger. Em. 1096.

Absinthium vulgare, Raii Syn. 188; Park. 98; Fuch's Hist. 1. f.; Ic. 2. f.

Absinthium, Matth. Valgr. v. 2. 47. f.; Camer. Epit. 452. f.

Apsinthium, n. 124; Hall. Hist. v. 1. 53.

Artemisia Absinthium, Lin. Sp. Pl. 1188; Willd. v. 3. 1844; H. Brit. 864;

Eng. Bot. v. 18; t. 1230; Hook. Scot. 239; Woodv. t. 120.

FOREIGN.—*Absinthe commun*, Fr.; *Assenzio*, It.; *Artemisio axengo*, Sp.; *Wormuth*, Ger.

COMMON Wormwood, which, Dr. Thomson justly observes,* is the only species of *Artemisia* that deserves to be retained in the list of *materia medica*, is an indigenous perennial plant, growing naturally in waste places, and by road sides; flowering in August. In the neighbourhood of London, it is extensively cultivated for medical use, but wild specimens are more powerful than garden ones. At Mitcham, in Surrey, it is a good deal

* London Dispensatory, 3d edit. p. 182.

cultivated for the seed, which is sold to the rectifiers of British spirits; and in Scotland, the distillers of great-still whiskey sometimes employ it in place of hops, and for their use, small fields of it are occasionally sown.

The root is woody and branched, with numerous fibres below. The stems rise one or two feet high; are branching, erect, striated, leafy, and paniced at top. Every part of the herb is covered with a close silky down, and has a peculiar strong aromatic odour. The lower leaves are bipinnate, on long footstalks; the upper pinnatifid, or digitated, on shorter footstalks, with broadish, entire, obtuse segments. The racemes are erect, and the flowers stalked, drooping, hemispherical, of a yellow colour, and accompanied by entire, oblong bractees. The common calyx is imbricated and roundish. The florets of the disc are numerous, perfect, tabular, 5-lobed; those of the radius few, and destitute of stamens. The filaments are five, short, and united by their anthers into a 5-toothed tube. The germen is small, with a large recurved style and cloven stigma. The seeds are small, obovate, and naked. The receptacle is convex, and clothed with fine white silky hairs. Fig. (a) represents the calyx magnified to show the scales; (b) a section of the receptacle with a perfect flower; (c) the pistil and germen; (d) the corolla spread to show the insertion of the stamens.

QUALITIES AND CHEMICAL PROPERTIES.—Common Wormwood has a strong fragrant odour, and an intensely bitter, nauseous taste. These qualities are most remarkable in the fresh leaves, which lose part of their disagreeable smell by drying. The flowers are nearly as bitter as the leaves, but less nauseous; the roots are warm and aromatic, without the bitterness of the other parts of the plant. The leaves, and flowering tops, are the parts directed for medical purposes; and their peculiar virtues may be extracted either by water, or by alcohol. Besides the resinous matter, in which the bitter quality more immediately resides, the herb contains extractive, some earthy and saline matters, and an essential oil, which is not in the least bitter. By long boiling the essential oil is dissipated, and the bitter is obtained entire. An infusion of the herb gives to

water an olive tinge, which is slowly changed to black by the salts of iron; and superacetate of lead throws down a yellowish green flocculent precipitate.

MEDICAL PROPERTIES AND USES.—Wormwood is one of the most popular stomachics, and possesses the properties of the class of bitters in a considerable degree; but it is inferior in medicinal powers to gentian, chamomile, quassia, and many others. It is regarded as anthelmintic, slightly tonic, and, in an inconsiderable degree, diuretic. It is an ingredient in the *Decoctum pro Fomento* of the older editions of the London Pharmacopæia, usually termed *Fotus communis*, which is made by boiling an ounce of dried chamomile, dried wormwood, dried southernwood, and half an ounce of bay-leaves in six pints of water. Its chief use is in dyspepsia, and hypochondriacal affections; and has at different times acquired a high reputation for its efficacy in intermittents, gout, scurvy, jaundice, and dropsy. Like all other bitters it has been of service in calculous complaints, and is an ingredient in the once celebrated Portland powder for the cure of gout. Haller extols its powers as a stomachic, and recommends it as a preventative of the fits of gout, for which purpose it is said to have been advantageously employed by the Emperor Charles V. “*Princeps est medicamentum stomachicum, quod tonum fibrarum ventriculi laxatum reparet, in cruditate acida, aut hypochondriaca, magnum auxilium est; longo usu podagram avertis, proprio meo experimento. Quare etiam in iuero extractum et in hydropis initiis vinum apsinthites summo cum fructu adhibui.*”^{*} The extract is nearly a simple bitter, and may be administered in doses of gr. x. to ℥j, two or three times a day. The essential oil is recommended by Hoffman as an antispasmodic, and anodyne; and by Boerhaave in tertians; but modern practice supplies more effectual remedies. The vegetable alkali of the shops was formerly procured from this herb, and called salt of wormwood; and some have supposed that saline draughts made with it, sit more easy on the stomach.

* Haller Hist. Stirp. Indig. Helvet. tom. 1. p. 54.

DOSE.—In substance, ℥j. to ʒss.; of the infusion, made by macerating, ʒvi. of the herb in ʒxij. of water, ʒj to ʒiss.

OFF. PREP.—*Extractum Absinthii.* D.

ARTEMISIA SANTONICA.—*Tartarian Southern-wood.*
Pl. 58.

** *Procumbent before flowering.*

SPEC. CHAR. *Stem leaves pinnate, linear, multifid. Branches undivided. Spikes 1-ranked, reflexed; Flowers with five florets.*

Syn.—Sementina, Ger. Em. 1100.

Semen Sanctum, Lob. Ic. 758.

Absinthium Santonicum Alexandrinum, Bauh. Pin. 139; Raii Hist. 368; Park. 132.

Absinthium Seraphium Ægyptium et semen, Sanctum, Camer. Epit. 457.

Artemisia Santonica, Sp. Pl. Willd.; Woodv. 335. t. 123.

FOREIGN.—Sementine, Fr.; Santonico, It.; Sartarisches Beyfus.

THIS species of Artemisia is a native of Tartary, and Persia; and is reported to have been cultivated in England by Miller, in 1768. It flowers from September, till November.

The root is perennial and woody. The stem is two feet high or more, round, panicled, erect, and somewhat hoary. The leaves on the upper part of the stem and branches are small, sessile, linear, entire, and undivided; the lower ones pinnate, much cut, linear, of a pale green colour above, and hoary beneath. The flowers are roundish, pale brown, solitary, and placed in alternate spikes or racemes upon short footstalks, and are all directed the same way. In the fruiting plant the branches are erect, and lose their hoariness. The common calyx is composed of numerous narrow imbricated scales. The florets of the disc are hermaphrodite; those of the radius female; and both, in their situation, and structure, agree with the preceding species. The receptacle is naked.

QUALITIES.—This species of Artemisia very much resem-

bles common wormwood in its chemical, and sensible qualities. It has a strong disagreeable odour, and when chewed, first warms the tongue, and then leaves a sensation of cold. The seeds, both of this and of the *Artemisia judaica*, are brought from the Levant, and sold under the name of worm-seed.

MEDICAL PROPERTIES.—The seeds of this plant, known by the name of *Semina Santonici*, were formerly much used for the expulsion of worms, but have given place to anthelmintics more deserving of notice. They have likewise been supposed to possess emmenagogue powers. Bergius says, “*Puellæ cuidam decenni, vermibus conflictanti, semina santonici exhibui, sed per illud tempus, quo iis utebatur, menses fluxerunt, quare cognita, usum eorundem dissvasi, unde etiam fluxus sponte cessavit.*” When employed as an anthelmintic, from twenty grains to one drachm, to an adult, may be given in syrup, or treacle, combined with small doses of the sulphate of iron, two or three times a-day, interposing a cathartic.

ARTEMISIA ABROTANUM.—*Common Southern-wood.**

* *Shrubby erect.*

SPEC. CHAR. *Leaves setaceous, pinnatifid; stem very branching, shrubby.*

Syn.—*Abrotanum mas*, Ger. *Em.* 1105; *Raii. Hist.* 371; *Dodon. Pempt.* 21.

Abrotanum mas vulgare, *Park. Theatr.* 92.

Abrotanum mas angustifolium majus, *Bauh. Pin.* 136; *Tourn. Inst.* 459; *Duham. Arb.* 20. t. 4.

Artemisia Abrotanum, *Sp. Pl. Willd.* v. 3. 1815; *Woodv.* v. 3. t. 119.

FOREIGN.—*Abrotonum*, Lat.; *L' Aurone des Jardins*, *Citronelle Auronne*, Fr. *Abrotano*, Ital.; *Limbriguera*, Sp.; *Stabwurz*, *Eberaute*, *Gartenwurz*, Ger.

THIS species of *Artemisia* is a perennial under-shrub, a native of Syria, China, Siberia, Italy, Carniola, and Montpellier. In

* We have not thought it necessary to give figures of this and the following species; that our work might not be unnecessarily expensive.

England, it was cultivated by Gerarde in 1596, and probably much earlier. Although it sustains no injury from our ordinary winters, it seldom flowers.

The root is woody and fibrous. The stem rises two or three feet in height; is branching, and covered with an ash-grey bark. The leaves are alternate, doubly and irregularly pinnate, and stand upon long footstalks. The leaflets are linear, very narrow, entire, concave on the upper surface, concave below; tomentose, and of a pale green colour. The flowers, which are in close upright spikes at the extremities of the branches, are small, numerous, and of a pale yellow colour. The seeds are naked and solitary.

Southernwood is called in Greek, *Αβροτονον*, which is variously derived from *αβροτον*, *inhumanum*, bitterer than wormwood; from *αβρωτον*, *cibo inutile*, unfit for food; *δια το προς οψιν αβρον και απαλον φαινεσθαι*, from the delicacy and softness of its appearance; or from *αβρος* and *τονος*, *οτι αβρωσ τεινεται*, because it is extended, or grows in a very soft manner.

QUALITIES.—The herb, which is the part used in medicine, is exceedingly grateful in odour to most persons, and there are few cottage-gardens in which it is not to be found. The taste is pungent, bitter, and somewhat nauseous; it depends on an essential oil, and a small portion of resinous matter, soluble in proof spirits; the tincture thus formed is of a fine green colour, and contains the active properties of the plant in an eminent degree. The infusion is of a pale brown colour, possesses a slight bitter taste, strikes a black colour with the sulphate of iron, and precipitates the acetate of lead. Six pounds of the fresh tops yield about a drachm of essential oil, of a bright yellow colour, and an odour resembling that of the plant.

MEDICAL PROPERTIES AND USES.—Southernwood agrees in its medical properties with the other species of *Artemisia*, but is more disagreeable; and as it possesses no advantages over either the common, or the sea wormwoods, it is never employed in modern practice. A decoction of the herb was formerly employed externally in fomentations; it has also been used under the form of ointment and lotion for some cutaneous eruptions,

and for preventing the hair from falling off. In the days of Gerarde, Southernwood was highly extolled in a variety of diseases, and the following extract from his Herbal will at least afford amusement:—"The tops, flowers, or seed, boiled or stamped raw with water and dranke, helpeth them that cannot take their breath without holding their necks straight up, and is a remedie for the crampe, and for sinewes shrunke and drawne together; for the sciatica also, and for them that can hardly make water, and it is goode to bring down the termes. It killeth wormes and driveth them out; if it be drunke with wine, it is a remedie against deadly poisons. Also it helpeth against the stinging of scorpions and fiele spiders, but it hurteth the stomake. Stamped and mixed with oile, it taketh away the shiuering cold that cometh by the ague fits, and it heateth the body if it be anointed therewith before the fits do come. It is goode for inflammations of the eies, with the pulpe of a roasted Quince, or with crums of bread, and applied pultis-wise. The ashes of burnt southernwood with some kind of oyle that is of thinner parts, as of Palma Christi, Radish oyle, oyle of sweet Marierome, or Organie, cureth the pilling of the haire, and maketh the beard to grow quickly; being strowed about the bed, or a fume made of it vpon hot embers, it driveth away serpents; but if a branch be laid vnder the bed's head, they say that it prouoketh venerie. The seeds of Southernwood made into powder, or boiled in wine and drunke, is good against the difficultie and stopping of vrine; it expelleth, wasteth, consumeth, and digesteth all colde humours, tough slime, and flegme, which do usually stop the spleene, kidneies, and bladder. Southernwood drunke in wine, is good against all venome and poison. The leaves of Southernwood boiled in water vntil they be soft, and stamped with barley and barrowes grease vnto the forme of a plaister, dissolueth and wasteth all colde humours and swellings, being applied or laide thereto."

Dose.—In substance, the dose may be from ℥i to ʒj.

ARTEMISIA MARITIMA.—*Sea Wormwood.*

* * *Procumbent before flowering.*

SPEC. CHAR. *Leaves* downy, pinnatifid; uppermost undivided. *Flowers* drooping, oblong, sessile, racemed. *Receptacle* naked.

Syn.—*Absinthium marinum album*, *Raii Syn. ed.* 3. 188; *Ger. Em.* 1099. f.

Absinthium maritimum nostras, *Dill. in Raii. Syn.* 189.

Artemisia maritima, *Lin. Sp. Pl.* 1186; *Willd. v.* 3. 1833; *Woodv. t.* 122.

ENGLISH.—*Drooping Sea Wormwood*; *French Sea Wormwood*; *Sea Mugwort*; *English Sea Wormwood*; *Roman Wormwood*; *Herb-sellers.*

THIS is a native plant, growing on the sea-shore, or about the mouths of large rivers, and flowering in August, and September. We observed it growing plentifully by the side of the Thames, near Greenhithe, Kent.

The root is perennial, and rather woody. The stems a foot high, or more; solid, woody, erect or decumbent; alternately branched, leafy, and covered with a fine white cottony down. The whole herb is hoary: the lower leaves are pinnate, with 3-cleft segments; the upper ones linear or irregularly cleft. The flowers are in unilateral leafy racemes, nearly sessile, ovate-oblong, drooping, and of a yellowish brown colour. The outer scales of the calyx are woolly; the inner ones nearly naked, with a broad membranaceous margin. The receptacle is small and naked. The florets are very few; those of the ray sometimes wanting.

QUALITIES.—It has a more agreeable aromatic odour, and less bitter taste than common wormwood; its specific virtue being supposed to depend on a portion of resinous matter, and an essential oil,

MEDICAL PROPERTIES.—The *Artemisia maritima*, as well as the preceding species, has been sometimes prescribed in worm-cases, dyspepsia, and jaundice. Its medical properties are those of a slight tonic, inferior in efficacy to common wormwood, and not often employed except in discutient and antiseptic fomentations, in inflammations, tumors, and foul ulcers; where its topical application has been thought beneficial. In substance, the dose may be from ʒj. to ʒj. The infusion is made by macerating for four hours six drachms of the leaves in ten ounces of boiling water. Dose, a cupful twice or three times a-day.



Tanacetum vulgare L.

TANACETUM VULGARE.

Common Tansy.

Class XIX. SYNGENESIA.—Order II. POLYGAMIA
SUPERFLUA.

Nat. Ord. COMPOSITÆ, γ, DISCOIDÆ, Lin. CORYMBIFERÆ,
Juss.

GEN. CHAR. *Receptacle* naked. *Seed* with a membranous crown. *Calyx* imbricated, hemispherical. *Florets* of the circumference 3-cleft, obsolete, sometimes wanting.

SPEC. CHAR. *Leaves* doubly pinnatifid, deeply serrated, naked.

Syn.—*Tanacetum*, Raii Hist. 108; Ger. Em. 650. f.; Matth. Valg. v. 2. 259. f.; Camer. Epit. 650. f.; Trag. Hist. 158. f.
Tanacetum millefolii foliis, Lob. Ic. 749. f.
Tanacetum, n. 132.; Hall. Hist. v. 1. 57.
Artemisia monoclonos, Fuchs. Hist. 46. f.
Athanasia seu Tanacetum, Dalech. Hist. 955.
Tanacetum vulgare, Lin. Sp. Pl. 1184; Willd. v. 3. 1814; Fl. Brit. 862.; Eng. Bot. v. 18. t. 1229; Hook. Scot. 239.; Bull. Fr. t. 187.; Woodv. t. 115.; Stokes v. 4. 180.

FOREIGN.—*Tanassie*, Fr.; *Tanaceto*, It.; *Atanasia*, Sp.; *Rheinfarn*, Ger.; *Wormkruid*, Dut.; *Rheinfan*, Dan.; *Dikaja riabina*, Russ.

TANSY is a well-known perennial plant, a native of most parts of Britain, growing generally on the banks of rivers, hedges, and the borders of fields; flowering in July and August.

The root is long, somewhat creeping, and fibrous. In a wild state it seldom exceeds two feet in height; the stem is erect, rather angular, striated, leafy, solid, unbranched, smooth, and frequently reddish towards the top; the leaves alternate, dark green, smooth, doubly pinnatifid, and notched or deeply serrated. The flowers are numerous, of a golden yellow colour, flattish, and terminate the stem in a dense corymb. The common calyx is hemispherical and imbricated; the scales are acute and mem-

branaceous at the margin. The florets are of two kinds; those of the *disc hermaphrodite*, numerous, tubular, and 5-cleft; those of the *radius female*, few, sometimes wanting, tubular at the base, and 3-cleft. There are five capillary, very short filaments, in the florets of the disc only, with the anthers forming a cylindrical tube; the germen in both is obovate, compressed; the style thread-shaped; and the stigma bifid and reflexed; the permanent calyx contains solitary, oblong, angular; seeds crowned with a membranous border.—Fig. (a) a floret of the disc; (b) floret of the radius; (c) common calyx; (d) receptacle.

Besides the common tansy, there are two or three other species, very generally cultivated in our gardens, particularly the annual tansy, (*T. annuum*;) and the costmary tansy, or ale-cost (*T. balsamita*.) Of the former there is a variety with curled leaves, which is often called double tansy, and likewise a sort with variegated leaves, which is sometimes admitted into shrubberies.

QUALITIES.—The leaves and flowers have a warm, bitter taste, and a strong, peculiar, not unpleasant odour. These qualities they readily impart both to water and alcohol: and a greenish-yellow essential oil is afforded by distillation with water, smelling strongly of the herb.

MEDICAL PROPERTIES AND USES.—Tansy is tonic, stomachic, and anthelmintic; and as such is useful in dyspepsia, dropsy, hysteria, intermittents, obstructed menstruation, and other diseases; it also forms a popular remedy for expelling worms, particularly the *lumbricus teres*, or round worm. Not only the leaves and flowers have been employed with this intention, but also the seeds, which, according to Dr. Woodville, are sometimes substituted for those of Santonicum. The infusion in boiling water has been strongly recommended by Dr. Clarke as a preventive of the return of gout;* but experience has not confirmed its utility. The young leaves are sometimes shredded down and employed to give flavour and colour to puddings; and the Finlanders prepare a red dye from them. If dead animal matter be rubbed with this plant, Dr. Withering says, the flesh-fly will not attack it.

DOSE.—In powder, the dose may be from ʒj to ʒj, twice or thrice a-day; but it is more commonly taken in infusion, or drank as tea.

* Clarke's Essays Physical and Literary, v. 3, p. 438.



Arnica montana

ARNICA MONTANA.

Mountain Arnica, or Leopard's-Bane.

Class XIX. SYNGENESIA.—Order II. POLYG. SUPERFLUA.

Nat. Ord. COMPOSITÆ DISCOIDÆÆ, Lin. CORYMBIFERÆ, Juss.

GEN. CHAR.—*Receptacle* naked. *Seed-down* simple. *Calyx* with equal leaflets. *Cororollules* of the ray have five filaments without anthers.

SPEC. CHAR.—*Leaves* ovate, entire; stem leaves opposite, in pairs.

Syn.—*Alisma*, Matth. Diosc. 934; *Bauh. Hist.* 3. pars. 1. p. 20.

Chrysanthemum latifolium, Dodon. 263; *Ger. Em.* 742.

Caltha alpina, Tabern. 336. ed. Germ. p. 714.

Doronicum Plantaginis folio alternum, Bauh. Pin. 185.

Doronicum austriacum quartum, Clus. Pan. 522.

Doronicum oppositifolium, Lamar. Dict. 2. p. 312.

Arnica foliis conjugatis ovatis integerrimus, n. 90. Hall. Hist.

Arnica, Collin Obs. v. 1. cum icone.

Arnica montana, Lin. Sp. Pl. 1245; Willd. 3. 2406; Hort. Kew. ed. 2d. p.

Fl. Dan. t. 63; *Scop. Carn.* n. 1086; *Gærtn. Fruct.* 2. p. 451. t. 173. f. 1.;

Leers Herb. n. 651; *Villars Dauph.* 3. p. 207; *Fl. Franc.* 4. p. 175; *Bot.*

Mag. v. 42. t. 1749; *Woodv.* p. 10.

FOREIGN.—*Doronic à feuilles opposées*, vulg.; *Le tabac des Vosges*, Fr.; *Arnica montana*, It.; *Arnica*; *tabaco de montana*, Sp.; *Wolverley*; *Wolferley*, Ger.; *Wolverley*, Dan.; *Fibler*, Swed.; *Valkruid*, Dut.

THIS is a hardy perennial, a native of the northern parts of the continent of Europe and Siberia, delighting in moist shady situations, and flowering in June and July. It is also found on the Pyrenees, and was cultivated by Mr. Philip Miller in 1759. The specimen from which our figure was drawn blossomed this season at the Botanic Garden, Chelsea, and for it we are indebted to Mr. W. Anderson, F.L.S.

The root is blackish, woody, abrupt at the lower end, and furnished with many long slender fibres. The stem, which rises about a foot in height, and not more than six inches in alpine situations, is simple, obscurely angular, striated, rough, hairy, and terminated by two or three upright peduncles, each bearing one flower, of a deep yellow colour, tinged with brown. The radical leaves are ovate, entire, ciliated, and obtuse; the cauline ones stand in opposite pairs, and are lance-shaped. The calyx is cylindrical, and composed of fifteen or sixteen rough hairy lanceolate scales, of a dirty green colour, and purple at the points. The florets of the disc are very numerous, tubular, with a five-lobed margin; those of the radius about fourteen, ligulate or strap-shaped, as long as the calyx, striated, three-toothed, and hairy at the base. The seeds are oblong, blackish, hairy, and crowned with a straw-coloured down.—Fig. (a) represents a floret.

QUALITIES AND CHEMICAL PROPERTIES.—The *leaves* of the dried plant have a pleasant aromatic odour, and excite sneezing, while their taste is somewhat aromatic, bitter, and pungent. The root is bitter and acrid. According to an analysis of the flowers, which have a fetid smell and a penetrating bitter taste, by M.M. Chevallier and Lassaigne, the following constituents were obtained.

A resin, having the odour of the flowers.

A bitter nauseous matter, resembling *cytisine*.

Gallic acid.

Yellow colouring matter.

Albumen.

Gum.

Muriate of potass.

Phosphate of ditto.

Trace of sulphur.

Carbonate of lime.

An atom of silex.

MEDICAL PROPERTIES AND USES.—In over doses the *arnica montana* exerts peculiar effects on the animal economy. It in-

duces great anxiety, particularly in the region of the stomach, followed by pinching pains, nausea, a flow of saliva, and sometimes vomiting. If it penetrate to the intestines, it induces colic pains, which are rarely followed by alvine evacuations. These effects generally pass off soon, without leaving any derangement of the system, provided the dose be not too large. If it be, the brain and spinal marrow are peculiarly affected, twitchings and involuntary motions of the extremities generally preceding the other effects on the nervous system.

Dr. Collin of Vienna, endeavoured in the year 1773 to recall this plant from disuse by the publication of numerous cases of putrid fever, intermittents, palsies, tremors, and amaurosis, from which it would appear to be a very powerful and successful remedy.

Dr. Crichton states, that in the worst stages of typhus, treated by Stoll in the hospital at Vienna, it succeeded wonderfully well when the pulse was exceedingly weak, small, and quick, and when petechiæ had appeared; and even when the patients seemed exhausted by a colliquative diarrhæa, this remedy generally produced the happiest effects.

Dr. Collin says that he has cured thirty-six quotidian, forty-six tertian, and fifty-eight quartan agues with the extract of arnica, a drachm of which was given in the course of the day. Its success in these cases is confirmed by the testimony of Professor Sebold of Prague.

In Jutland it is a popular remedy for ague, and Dr. Manger states that he has experienced the best effects from an infusion of about half an ounce of the flowers, drank two hours before the access of the paroxysm. It has also been given in tremors, palsy, and amaurosis, with different degrees of success; but as it evidently possesses great power over the nervous system, it is deserving of the attention of British practitioners.

The whole plant is generally used in infusion or decoction, in the proportion of an ounce of it to a pint and a half of water, which quantity may be given in doses of a cupful in the course of a day.

Of the flowers two or three drachms are generally sufficient ; although an ounce has been taken without injury in the course of the day. The extract made from the whole plant is preferred by Dr. Crichton, who gives a drachm in the same time.

In addition to the physical effects which we have already adverted to, it is stated to be capable of indicating the place where any injury has taken place, from an external cause, by augmenting the pain in the part, or renewing it if have ceased to exist. The root seldom produces such disagreeable symptoms as the flowers, but as these are considered auspicious signs, they must not be heeded unless violent. A little of the extract of gentian prevents its effects on the stomach, and co-operates in its beneficial results ; which are generally accompanied by an increase, but not velocity of pulse.



Inula Heleniensis.

INULA HELENIUM.

Elecampane.

Class XIX. SYNGENESIA.—Order II. POLYG. SUPERF.

Nat. Ord. COMPOSITÆ, γ, DISCOIDEÆ, Lin. CORYMBIFERÆ, Juss.

GEN. CHAR. *Receptacle* naked. *Pappus* simple. *Calyx* imbricated. *Anthers* with two bristles at the base.

SPEC. CHAR. *Leaves* ovate, rugged, clasping the stem, tomentose beneath. *Calyx-scales*, ovate, leafy.

Syn.—Helenium, *Raii Syn.* 176; *Ger. Em.* 793. f.; *Camer Epit.* 35. f.; *Matth. Valgr.* v. 1. 65. f.; *Fuchs. Hist.* 242. f.

Helenium vulgare, *Bauh. Pin.* 276.

Aster. n. 72. *Hall. Hist.* v. 1. 31.

Ελένιον, *Diosc. Ic. t.* 141.

Inula Helenium, *Lin. Sp. Pl.* 1236; *Willd.* v. 3. 2089; *Fl. Brit.* 891; *Eng. Bot.* v. 22. t. 1546. *Hook. Scot.* 245; *Woodv. t.* 108.

PROVINCIALY.—*Great-flowered Elecampane*; *Scab-wort*; *Horse-heal*.

FOREIGN.—*Inula Laleniere*, Fr.; *Enula Campana*, It.; *Enula Campana*, Sp.; *Alantwurzel*, Ger.

ELECAMPANE is an indigenous perennial plant; and is occasionally met with in moist meadows, and pastures, in many parts of the south and west of England; flowering in July and August. We observed it several years ago in the meadows near Pirten-Hall, in Bedfordshire; and it was noticed by Sir James E. Smith, in 1795, between Worcester and Ludlow, and between Bishop's Castle and New Town, Montgomeryshire. It grows likewise in several parts of Essex, Norfolk, and Sussex; also about St. Ives,

Cornwall, and Bugden, Huntingdonsire. It was found between Ulverston and Foulness, by Mr. Crowe, and near Ewell, Surrey, by Dr. Thomson.

The root is thick, fusiform, branching, and aromatic. The stem rises three or four feet high, being one of our tallest herbaceous plants; it is thick, round, leafy, furrowed, solid, branched and downy towards the top. The leaves are large, ovate, slightly serrated, veiny, of a deep green colour above, and downy and hoary underneath; the radical ones are a foot long and stalked, but those on the stem are sessile and clasping. The flowers are large, radiated, solitary, terminal, and of a golden yellow colour. The common calyx is hemispherical; the outer scales are broad, imbricated, and downy on both sides; the inner are narrow, linear and chaffy. The florets of the disc are very numerous, perfect, tubular, with five equal segments; those of the radius numerous, spreading, ligulate, linear, each terminating in three unequal teeth. The anthers are united into a cylindrical tube, and furnished with bristles at their base: the germen in all the florets is oblong, having a thread-shaped cloven style, and spreading obtuse stigma. The seeds are quadrangular, smooth, and furnished with a simple down. The receptacle is reticulated and roughish.—Fig. (*a*) represents a floret of the radius, showing the germen and style; (*b*) a floret of the disc; (*c*) the corolla removed, showing the anthers united into a tube; (*d*) the anthers spread, showing the 5 sharp teeth at the summit, and 10 straight bristles at the base.

Elecampane is also a native of Japan, Denmark, Germany, Flanders, Switzerland, Austria, France, Piedmont, and Spain; and is supposed to be the *Inula* of Pliny, who mentions *Helenium* as a different plant. Horace likewise refers to it.

Erucas virides, inulas ego primus amaras
Monstravi incoquere.—Sat. 8. v. 51.

————— *quum rapula plenus*
Atque acidas mavult inulas.—Sat. 2. v. 44.

Professor Alston says, “ the description of Dioscorides, first *Helenium*, l. i. c. 27. p. 22. agrees tolerably well to our *Enula*.

Some think it the *Panax Chironium Theophrasti* Hist. 1. 9. c. 10."

QUALITIES AND CHEMICAL PROPERTIES.—Elecampane root, has a strong, partly aromatic and partly foetid odour: its taste is disagreeable, bitter and aromatic; and it leaves, in chewing it, a burning heat, which remains for a considerable time. Both alcohol and water extract its virtues, but the former most completely.

In examining the root of the *Inula Helenium*, Mr. Rose imagined, that he discovered a new vegetable product, to which Dr. Thompson, Professor of Chemistry, Glasgow, has given the name *Inulin*. It is white and pulverulent, like starch. When thrown on red-hot coals, it melts, diffusing a white smoke, with the smell of burning sugar. It yields, on distillation in a retort, all the products furnished by gum. It dissolves readily in hot water; and precipitates almost entirely on cooling, in the form of a white powder; but before falling down, it gives the liquid a mucilaginous consistence. It precipitates quickly on the addition of alcohol. Inulin is obtained by boiling the root of this plant in four times its weight of water, and leaving the liquid in repose. M. M. Pelletier, and Caventou have found the same starch-like matter in abundance, in the root of colchicum; and M. Gautin in the root of pellitory. It has also been found in the tubercles of the *Helianthus tuberosus*, (Jerusalem Artichoke,) by M. Braconnot. Starch and inulin combine; and when the former is in excess, it is difficult to separate them. The only method is to pour infusion of galls into the decoction, and then to heat the liquid; if inulin be present, a precipitate will fall, which does not disappear till the temperature rises to upwards of 212° F, while if only starch be present, it will redissolve at 122° F.

The action of inulin on the animal economy has not yet been ascertained.

MEDICAL PROPERTIES AND USES.—The root of this plant is among the least efficacious of bitters and aromatics; and has the reputed virtues of a diaphoretic, diuretic, expectorant, and tonic. The ancients had a high opinion of its medicinal

properties, and it was warmly recommended in dyspepsia, palsy, cachexy, dropsies, colica pictonum, sciatica, uterine obstructions, and pulmonary complaints; but it is an useless appendage to the materia medica, and is now never used, unless it be by “*cow-doctors*,” who are ignorant of its properties, or by dishonest druggists, who add a small quantity of tartar-emetic to it, and sell the mixture for powdered ipecacuanha; which, of course, produces a nauseating and depressing effect, that genuine ipecacuanha would not. This spurious article costs about two shillings a pound, while ipecacuanha is sometimes as high as thirty shillings; and is so like the latter in appearance, that great temptations are held out, to a set of men who too often profit by the ignorance of the medical practitioner; and are alike unmindful of his reputation, or of the recovery of their fellow-creatures.

DOSE.—The dose of the powdered root may be from ʒj to ʒj; in infusion ʒj; and from ʒij to ʒiſs in decoction.



Solidago Virgaurea L.

SOLIDAGO VIRGAUREA.

Common Golden-rod.

Class XIX. SYNGENESIA. Order II. POLYG. SUPERFLUA.

Nat. Ord. COMPOSITÆ, γ, DISCOIDÆ, Lin.

CORYMBIFERÆ, Juss.

GEN. CHAR. *Receptacle* naked. *Down* simple. *Calyx* imbricated, with close scales. *Florets* of the radius about five.

SPEC. CHAR. *Stem* slightly zigzag, angular. *Clusters* downy, paniced, crouded, erect. *Upper leaves* lanceolate, narrow at both ends; lower elliptico-lanceolate, hairy, partly serrated.

Syn.—*Virga aurea*, Raii Syn. 176; Ger. Em. 430. f; Park. 542; Camer. Epit. 748.

749. f, f; Matth. Valgr. v. 2. 354. f. Dod. Pempt. 142. f.

Virga aurea vulgaris latifolia, Bauh. Hist. v. 2. 1062. f.

Solidago n. 69. Hall. Hist. v. 1. 29.

Solidago vulgaris, Gray Nat. Arrang. of Brit. Pl. v. 2. p. 465.

Solidago Virgaurea, Lin. Sp. Pl. 1235; Willd. v. 3. 2065; Fl. Brit. 889;

Eng. Bot. v. 5. t. 301; Hook. Scot. 244. Stokes, v. 4. 219.

FOREIGN.—*La verge d'or*; *Verge dorée*, Fr.; *Verga d'oro*, It.; *Vara de oro*, Sp.;

Vara d'oiro, Port.; *Die Goldruthe*; *St. Peterstab*; *Gülden Wundkraut*, Ger.;

Gulbris, Swed.; *Solotoschnik*, Rus.

ONE species only of the genus *Solidago*, subject to many varieties, is found in this country. The Golden-rods are almost entirely North American; they are all perennial, mostly herbaceous, with simple undivided leaves, generally bearing small yellow flowers, in long slender spikes or panicles, whence the names of *Virgaurea* and golden-rod. Few of the species were known to Linneus, but the Hortus Kewensis, enriched from Dr. Solander's manu-

script, has thrown great light on the present genus. Linneus, in *Systema Vegetabilium*, ed. 14, has only fourteen species of *Solidago*. Willdenow, profiting by Mr. Aiton's work, enumerates forty. Mr. Pursh reckons up fifty-one North American species alone, and Sir J. E. Smith describes in all fifty-one.

The *Solidago Virgaurea* inhabits woods, copses, grassy lanes, and is found among furze on heaths in mountainous situations, throughout Europe as well as at *Labrador*, and even China, flowering from July to September. Our drawing was made from a specimen growing on Hampstead Heath,* and we perceived it in most of the woods about London.

* This delightful spot has long been celebrated for the great variety of native plants which it produces. It is, therefore, presumed that the following catalogue of the rarer and more useful vegetables which grow spontaneously on the Heath, and in the meadows, woods, and ponds in its vicinity, may not prove unacceptable to the young botanist and medical student:—

Veronica officinalis. Among furze on the Heath.

———— *Chamædryas*. On the Heath.

Tormentilla officinalis. *Id*.

Geum urbanum. In woods and hedges, common.

Veronica Beccabunga. In ditches on the Heath.

Pyrus torminalis. Bishop's and Ken Woods. *Martyn*. In hedges behind Primrose hill.

———— *Aria*. Bishop's Wood.—*Martyn*.

———— *domestica*. Ken Wood.

Rosa tomentosa. Plentiful about London.—*Curtis*.

Ornithopus perpusillus. In sandy places on the Heath.

Hypericum androsæmum. Hampstead Heath.—*Martyn*. Between Highgate and Muswell Hill.—*Blackstone*.

———— *pulchrum*. On the Heath, in Ken Wood, and other places.

Malva rotundifolia. Road-sides, common.

———— *moschata*. Field between Turner's Wood and North End; Ken Wood.—*Hunter*.

Gnaphalium rectum. On Hampstead Heath.—*Martyn*.

Carex pendula. Moist woods and hedges between Hampstead and Highgate.

Salix Russelliana. Osier grounds at Newington.—*Mr. J. Woods, jun*.

Menyanthes trifoliata. Larger bog on the Heath.

Chenopodium vulvaria. At the foot of a garden-wall, on the left-hand side of the road leading from London to Hampstead.

Alyssum sativum. At Highgate.—*Mr. J. Woods, jun*.

Prenanthes muralis. On a garden-wall, near the Spaniard, on Hampstead Heath.

Valeriana dioica. Ken Wood.

Agrostis capillaris. Between North End and Hampstead, also on the Heath.—*Milne*.

Stipa pennata. Said to be found in this neighbourhood by Mr. Hunter, Lord Mansfield's steward at Ken Wood House.

Empetrum nigrum.—*Id*.

Sanguisorba officinalis.—*Id*.

Tamus communis. Hedges in the lanes between the Heath and West End.

Bryonia dioica.—*Id*.

Lysimachia vulgaris. In a field near North End.

———— *nummularia*. In a moist ditch in Kentish-town fields.

———— *tenella*. Bogs, and in Ken Wood.

Ruscus acculeatus. Lane near West End.

Galeopsis Ladanum. Hedges.

Bartsia Odontites. By the side of the Great North Road.

The root is woody, somewhat curved, and furnished with long simple fibres. The stem generally rises from one to three feet

Trifolium Melilota.—*Id.*

Euphorbia amygdaloides. In all the woods in this district, common.

Veronica Beccabunga. A useless officinal, in ditches, common.

Digitalis purpurea. In the woods, but in no great plenty.

Lactuca virosa. In Maiden-lane, between London and Highgate.

Helleborus viridis. In a small wood near Finchley.—*Mr. J. Rayer.*

Arabis thaliana. In the hedge on the west side of Bishop's Wood.

Spergula arvensis. Sandy places, on the Heath.

Plantago coronopus.—*Id.*

Spartium scoparium. On the Heath, in great abundance.

Erythraea centaurium. West side of the Heath, and near the Vale of Health. *Mr. Bliss.*

Viola palustris. Near the bogs, west side of the Heath.—*Id.*

Vinca major. Under the hedge in Bellsizes lane.—*Id.*

Hydrocotyle vulgaris. In moist places on the Heath.

Drosera rotundifolia. Great bog, plentifully.

Sison amomum. By the side of the road leading from London to Hampstead.

Myosurus minimus. Ken Wood.

Convallaria maialis. On a ditch-bank to the north of the old target-bank, and also in Turner's Wood.—*Bliss.* In Bishop's Wood.—*Gough.* On the Heath plentifully in the days of Gerarde.

————— *verticillata*. Ken Wood.—*Hunter.*

————— *Polygonatum*. Ken Wood.—*Id.*

Staphylea pinnata. Ken Wood.—*Id.*

Polygonum Bistorta. Meadow between Bishop's Wood and Finchley. Ken Wood.

Vaccinium Myrtillus. Ken Wood, and several parts of the Heath.

Epilobium angustifolium. Hedge-bank in Lord Mansfield's premises.

Paris quadrifolia. Ken Wood.—*Hunter.*

Butomus umbellatus. Ken Wood.—*Id.*

Sedum Telephium.—*Id.*

Rubus Idæus. Ken Wood.

Helleborus viridis. Ken Wood.—*Hunter.*

Scutellaria minor. Abundant on the east side of the Heath.

Orobanche major. Ken Wood.—*Hunter.*

Lathyrus Nissolia. Ken Wood.—*Id.*

Polemonium cæruleum. Hampstead Heath, sparingly.—*Milne.*

Chrysosplenium oppositifolium. In a shady ditch that runs across Ken or Bishop's Wood.

Montia fontana. Moist places on Hampstead Heath.

Ononis arvensis. On the Heath, common.

Peplis Portula. In ponds on the Heath.

Anthemis nobilis. On the east side of the Heath, by the side of the road.

Nuphar lutea. Ken Wood, ponds.—*Hunter.*

Potentilla Fragariastrum. On dry banks about Bishop's Wood.

Acorus Calamus. By the side of the great pond or reservoir in Lord Mansfield's park, plentifully.

Pimpinella minor. At North End, on a bank.—*Milne.*

Ranunculus hederaceus. By the sides of ponds.

Ægopodium podagraria. In Southwell Lane, on the side of the road leading from Highgate to Muswell Hill.

Dianthus deltoides. Hampstead Heath.—*Martyn.*

Rumex sanguineus. Woods about Hampstead.—*Merret.*

Tulipa sylvestris. Top of Muswell Hill.—*Mr. J. Woods, jun.*

Iris fætidissima. Kentish Town and Muswell Hill.—*Martyn.*

Viburnum Opulus. In the woods, common.

Orobanche major. Ken Wood.—*Hunter.*

Equisetum sylvaticum. Meadow on the north side of Hampstead Heath.—*Mr. J. Woods, jun.*

Asplenium Trichomanes. On old walls.—*Mr. Wheeler.*

high; it is erect, leafy, slightly zigzag, never quite straight, angular, solid, and downy, giving off several short branches towards the top. The leaves are of a dull green colour above, paler underneath; the lower ones stalked, elliptic-oblong, pointed, more or less serrated, rarely altogether entire, very rough, and clothed with a rigid down; the stem leaves smaller, and gradually diminishing to lanceolate bractees, more entire, nearly sessile, alternate, and downy like the flower-stalks. The flowers are of a bright yellow colour, in terminal and axillary clusters, forming a dense leafy panicle, which varies exceedingly in magnitude, and in the number and size of the flowers, in elevated situations being shorter, more dense, and less compound. The scales of the calyx are erect, lanceolate, downy, membranous at the edges, and finely fringed. The florets of the disc are numerous, tubular, with five equal segments; those of the radius from six to ten, elliptic-oblong, 3-toothed, spreading; in decay becoming revolute and tawny. The filaments are capillary, short; and the anthers united into a cylindrical tube. The seeds are ovate, minutely hairy; the down appearing rough when viewed with a magnifier. The receptacle is naked, punctured

Aspidium Filix mas. On old hedge-banks, common.

———— *aculeatum.* Ken Wood.

———— *cristatum.*—*Id.*

———— *Oreopteris.* On the edge of Hampstead Heath.—*Mr. J. Rayer.*

Polypodium vulgare. Hedges near Childs Hill.

Scolopendrium vulgare. On the west side of Hampstead Heath.

Lycopodium inundatum. Hampstead Heath.—*Ray.*

Phascum axillare. North side of Muswell Hill.—*Dickson.*

Dicranum cerviculatum. Dry turfy parts of Hampstead Heath.—*Id.*

Hypnum undulatum. Bishop's Wood.—*Buddle.*

———— *stramineum.* Bog on the west side of the Heath.—*Dickson.*

———— *crispum.* On the Heath.

———— *palustre.*

———— *cuspidatum.*

———— *gracile.*

Bryum hypnoides.

———— *aureum.*

Jungermannia reptans. Shady places.—*Martyn.*

———— *pusilla.* Bishop's Wood.—*Id.*

———— *ciliaris.* In a rivulet running through a little wood called Old Fall, between Highgate and Muswell Hill.—*Dillenius.*

———— *bidentata.*

———— *undulata.*

———— *albicans.*

———— *tamariscifolia.*

———— *epiphylla.*

———— *bicuspidata.*

slightly cellular, and toothed at the margin.—Fig. (a) floret of the disc; (b) floret of the radius; (c) the common calyx; (d) the receptacle.

QUALITIES.—When bruised, the whole herb has a slightly aromatic smell, and a weak astringent taste. Its active matter is extracted by boiling water, and by alcohol; both solutions strike a black colour with the sulphate of iron, and from their slight astringency they probably contain a small portion of tannin.

MEDICAL PROPERTIES AND USES.—This plant is astringent and tonic. It has been much commended by the ancient writers as a remedy against stone in the bladder, in urinary obstructions, cistorrhœa, and ulcerations of the urinary organs. From its astringent powers, it may be employed with advantage in diarrhœa; and in calculus, in common with other remedies of this class, may occasionally prove beneficial; but it is seldom used in modern practice, either in this country or on the continent. It has been recommended also as a styptic both externally and internally; and from its reputed vulnerary qualities, it is called in some places *woundwort*, which is also a name given to many other plants. Gerarde says, “It is extolled above all other herbes for the stopping of blood in sanguinolent ulcers, and bleeding wounds; and hath in times past been had in greater estimation and regard than in these dayes; for in my remembrance, I have known the dry herbe which came from beyond the sea sold in Bucklers Bury in London (the Covent Garden of these times) for half a crowne an ounce. But since it was found in Hampstead Wood, euen as it were at our own townes end, no man will giue half a crowne for an hundred weight of it; which plainly setteth forth our inconstancie and sudden mutabilitie, esteeming no longer of any thing, how pretious soever it be, than whilst it is strange and rare.” Its dose may be from grs. x. to ʒj, or more, twice or thrice a day.

SOLIDAGO ODORA.—*Sweet-scented Golden-rod.*

SPEC. CHAR. *Stem* nearly smooth. *Leaves* linear-lanceolate, entire, smooth, with a rough margin, and covered with pellucid dots. *Racemes* panicled, one sided.

Syn.—*Virga aurea Americana, tarraconis facie, et sapore, panicula speciosissima, Pluk. Phytol. t. 116. f. 6.*

Solidago odora, Ait. Hort. Kew, ed. 2. n. 15; Willd. n. 22; Pursh. n. 24.

THIS plant is a native of America, growing in dry sunny situations, on fertile woodlands, from Canada to Carolina, principally throughout the Allegany mountains, flowering from August to October. The leaves have a delightful fragrant odour, partaking of anise and sassafras, but different from either. It yields on distillation a volatile oil, possessing the taste and aroma of the plant in a high degree. This oil appears to reside in the transparent cells, which constitute the dotting of the leaves, the root being wholly destitute of the fragrance of the herb.

This species of *Solidago* is said by Professor Bigelow to be a pleasant aromatic, stimulant, diaphoretic, and carminative. An essence made by dissolving the essential oil in proof spirit is used as a remedy for complaints attended with flatulency, and as a vehicle for unpleasant medicines of various kinds. It allays vomiting and spasmodic pains in the stomach, and from its pleasant flavour, covers the taste of laudanum, castor oil, and other medicines which the stomach frequently rejects.

Mr. Pursh states that the plant is dried in some parts of the United States as an agreeable substitute for tea; and that it has for some time been an article of exportation to China, where it fetches a high price.



Anthemis nobilis.

W. Clark. del. et sculp.

London. Published by John Churchill, Leicester Square. Oct. 1827.

ANTHEMIS NOBILIS.

Common Chamomile.

Class XIX. SYNGENESIA—Order II. POLYG-
SUPERFLUA.

Nat. Ord. COMPOSITÆ DISCOIDÆ, Lin. CORYMBIFERÆ,
Juss.

GEN. CHAR. *Receptacle* convex, chaffy. *Seed* crowned with a membranaceous border. *Calyx* hemispherical, scales nearly equal, with scariose margins. *Florets* of the ray numerous.

SPEC. CHAR. *Leaves* bi-pinnate, semi-cylindrical, acute, somewhat downy. *Stem* procumbent. Scales of the *receptacle* membranous.

Syn.—*Chamœmelum odoratissimum repens*, flore simplici, Raii Syn. 185; Bauh. Hist. v. S. p. 1. 118. f.

Chamœmelum romanum. Ger. Em. 775. f; Camer. Epit. 646. f

Chamœmelum n. 102. Hall. Hist. v. 1. 44.

Anthemis nobilis Lin. Sp. Pl. 1260; Willd. v. 3. 2180; Fl. Brit. 904;

Eng. Bot. v. 14. t. 980; Woodv. t. 103; Hook. Scot. 247; Stokes v. 4. 242.

FOREIGN.—*Camomille Romaine*, Fr.; *Camomilla Romana*, Ital.; *Manganella de Botera*, Sp.; *Roemische hamiller*, Ger.; *Baboenui*, Arab.

CHAMOMILE is a well-known perennial plant, which grows wild in Cornwall, Surrey, and some other parts of Britain. We found it in great abundance on Wimbledon Common, and on all the dry elevated heaths near London. It flowers in August, and September.

The roots are perennial, jointed, and fibrous. The stems, in a wild state, are mostly trailing, a span or more in length,

round, furrowed, foliaceous, and downy. The leaves are bipinnate, and of a pale green colour; the leaflets small, rather flat above, somewhat hairy, and generally divided into three pointed segments. The flowers are terminal, solitary, with a convex yellow disc, and numerous white, spreading, reflexed rays. The common calyx is hemispherical, and composed of several closely imbricated downy scales, with thin membranous edges; the florets of the disc are numerous, yellow, perfect, tubular, with five equal spreading segments; those of the radius, usually about eighteen, white, ligulate, spreading, with three teeth; the filaments are five, very short, capillary, and have their anthers united into a cylindrical tube; the germen is obovate, supporting a slender style, and furnished with a bifid reflexed stigma. The seeds are ovate, compressed and slightly crowned. The receptacle is conical, surmounted by minute chaffy scales, one to each floret, perceptible to the naked eye, but very conspicuous under a lens. Fig. (*a*) represents a floret of the radius; (*b*) a floret of the disc with the seed and chaffy scale; (*c*) the anthers spread; (*d*) a section of the receptacle.

The generic name, *Anthemis* is supposed to be derived from *Ἀνθεω*, *floreo*, having an abundance of flowers;—the English from *χαμαι*, and *μελον*, an apple, hence the Latin “*chamomilla*,” *quoniam odorem mali habeat*. (Plin. l. 22. c. 21.)

QUALITIES AND CHEMICAL PROPERTIES.—The flower of this plant is collected before it is fully blown, and then dried. As the taste and odour reside in the tubular florets, which are larger in the single flowers; these are preferable to the double that are always sold in the shops—another instance of utility being sacrificed to appearance. Chamomiles have a bitter, aromatic, and slightly pungent taste, and a strong unpleasant odour. By distillation they yield a volatile oil, on which their virtues appear to depend; but in the preparation of the extract it is lost. Boiling also dissipates the oil. Both water and alcohol take up their active parts, which are the essential oil, resin, and a bitter principle.

All soluble preparations of iron, nitrate of silver, oxymuriate of mercury, acetate and sub-acetate of lead, solutions of isin-

glass, and infusion of yellow cinchona bark, are precipitated by the infusion, and are therefore “*incompatibles*.”

MEDICAL PROPERTIES AND USES.—Chamomile is a powerful tonic and stomachic, and inferior to no other, when properly administered. It is an excellent and popular remedy for a weakened state of stomach, attended by the ordinary symptoms of indigestion, as heartburn, loss of appetite, flatulency, &c. In such affections, particularly if accompanied by a sluggish state of the intestinal canal, the cold infusion, made with half an ounce of the flowers to a pint of water, and combined with aromatics and alkalies, is grateful to the stomach: or, should hot water be employed, it must be allowed to stand on the flowers ten minutes only;—the time recommended in the London Pharmacopœa: unless, indeed, we wish to excite or encourage vomiting, when a tepid strong infusion will do both. Administered in substance, Chamomile has been successfully employed in intermittent fevers; but occasionally produces diarrhœa. Sir John Pringle states, that the antiseptic powers of the Chamomile are 120 times greater than those of sea-salt: and, externally, the flowers are used for fomentations: hot water, however, is just as efficacious. The infusion is a useful vehicle as a clyster for other more active remedies: and the extract, in doses of ten or fifteen grains, combined with myrrh and preparations of iron, affords a powerful and convenient tonic, in the form of pill. The dose of the powder is from ten grains to half a drachm; that of the infusion from one ounce to two ounces, two or three times a-day.

OFF. PREP.—Decoctum Anthemidis nobilis. *L. E.*

We have already remarked, that the essential oil is dissipated by boiling.

Infusum Anthemidis. *L. E.*

Extractum Anthemidis. *L. E.*

Oleum Anthemidis. *L.*

THE *Anthemis Cotula*, Stinking Chamomile, or May-weed, another species of this genus:—*receptaculis conicis, paleis setaceis*,

seminibus nudis, has been erroneously ranked by some writers on toxicology among the vegetable poisons. It is an indigenous annual, growing in waste grounds and amongst corn. The whole plant has a strong fœtid odour, and, where it abounds, is often found to blister the hands of those that gather it, which Prof. Hooker attributes to the minute glands sprinkled over its surface. It is never prescribed in the present practice, nor are we aware of its having ever proved poisonous in this country. Dr. Barton states that, like the common Chamomile, a strong decoction, given in the dose of a tea-cup full, will produce copious vomiting and sweating. In America it is used by the vulgar, as a sudorific in chronic rheumatism. A weak infusion, taken to a moderate extent, nauseates the stomach, and is sometimes employed to promote the action of an emetic. It was formerly used internally in scrofula, and hysteria; externally in fomentations.



Anthemis Pyrethrum.

ANTHEMIS PYRETHRUM.

Spanish Chamomile, or Pellitory of Spain.

SPEC. CHAR. *Stems* simple, 1-flowered, decumbent ;
leaves bipinnated, segments linear, pointed.

Syn.—Pyrethrum officinarum, *Ger. Em.* 758. 1 ; *Park.* 858. n. 2. 859. f. 2.

Pyrethrum flore bellidis, *Bauh. Pin.* 148 ; *Raii Hist.* 353.

Chamæmelum specioso flore, radice longa fervida, *Shaw. Afric.* 138.

Anthemis Pyrethrum, *Lin. Sp. Pl.* 1262 ; *Willd. v. 3.* 2174 ; *Woodv. v. 2,*
t. 104 ; *Curt. Bot. Mag. v. 13. t.* 462.

FOREIGN.—*Pyrèthre*, Fr. ; *Piretro*, It. ; *Anthemis pelitri*, Sp. ; *Bertram Wurtzel*
Zahn Wurtzel, Ger. ; *Akharacarum*, Tam. ; *Akurkurha*, Arab.

PELLITORY of Spain is a perennial plant, a native of the Levant, Syria, Arabia, Barbary, and the south of Europe. It has long been celebrated as a medicinal agent ; and merits a place in our collections, on account of the beauty both of the foliage and flowers : it is a very rare plant in this country, notwithstanding it was cultivated here, by Lobel, as long since as 1570. Parkinson, it appears, grew it ; as he observes, that the roots of the cultivated plants were much larger than those of the wild one : he tells us also, that it was too tender to endure our winters ; and to the latter cause, as well as to the difficulty of propagating it, for it does not ripen its seeds in this country, its present scarcity has been attributed.

The root is long, tapering, about the thickness of a finger, which runs down a foot or more into the ground, with a brownish cuticle, and sending off several small fibres. From the root proceed several procumbent stems, about a foot in height, round, hairy, commonly unifloral, and seldom branching. The leaves are doubly pinnate, with narrow linear segments, of a pale green colour. The flowers appear in June and July ; they are large, terminal, solitary, with the florets of the disc yellow, and those of the radius white on the upper side, and of a purplish colour

underneath. The florets resemble those of *Anthemis nobilis*; in the centre, or disc, are hermaphrodite, those of the circumference, margin or radius, are female, that is, have no stamens, nor male organs. Fig (a) and (b) represents a front and back view of a floret of the radius; (c) a floret of the disc; (d) the style; (e) the stamens.

QUALITIES.—The dried root has no smell. On being chewed, the taste, which is acid, is not immediately perceived, but it quickly raises a glowing heat, and a plentiful secretion of saliva. “The heat produced by *Pyrethrum* is joined with a kind of vibration, as when a flame is brandished with a lamp furnace . . . Being chewed, it makes a sensible impression on the lips, which continues (like the flame of a coal betwixt in and out) for nine or ten minutes; but the heat in other parts much longer.* This heat is by no means so painful as that which the arum, capsicum, and some other plants produce. Alibert says, “Par la distillation, cette racine fournit une huile butyracée très acrimonieuse;” and it is on this oil, which is deposited in vesicles on the bark, that its pungency depends. It is completely extracted by alcohol and sulphuric ether.

MEDICAL PROPERTIES AND USES.—This root is a powerful stimulant; and if applied in its recent state to the skin, it produces inflammation and vesication, like *Mezereon*.† Dioscorides commended it for tooth-ache, for which it is still beneficially employed by us; and by him and the Arabian physicians it was prescribed for rigors.

The Persians and Moguls consider it to be discutient and attenuant; and the Vytians prescribe an infusion of it, in conjunction with other medicines, as a cordial and stimulant in lethargic cases, in palsy, and in certain stages of typhus fever. In consequence of the immense flow of saliva that it is capable of producing, “inflammations and congestions of the neighbouring parts are relieved. Hence it has been found useful, when chewed, in some kind of head-ache, apoplexy, chronic ophthalmia, and rheumatic affection of the face, and, by its direct stimulus. in paralysis of the tongue and muscles of the throat.”

* Grew, of tastes.

† Bergius.



Lapsilago purpurea.

W. Clark del. et sculp.

London. Published by John Churchill, Leicester Square. May, 1827.

TUSSILAGO FARFARA.

*Colt's-foot.**Class XIX. SYNGENSIA.—Order II. POLYGAMIA.**Nat. Ord. COMPOSITÆ RADIATÆ, Lin. CORYMBIFERÆ, Juss.*

GEN. CHAR. *Receptacle* naked. *Pappus* simple.
Calyx scales simple, equal, numerous, submembranaceous, tumid at the base. *Seeds* compressed.
Florets ligulate, toothless.

SPEC. CHAR. *Scape* 1-flowered, scaly. *Flowers* radiant. *Leaves* cordate, angular, toothed, tomentose beneath.

Syn.—*Tussilago. Raii. Syn.* 173. 1.; *Ger. Em.* 811. f.; *Park.* 1220; *Camer. Epit.* 590, 591. f.; *Bauh. Hist.* v. 3. p. 2. 563. f.; *Matth. Valgr.* v. 2. 198. f.; *Dalech. Hist.* 1051. f.; *Fuch. Hist.* 140. f.

Petasites. n. 143, *Hall. Hist.* v. 1. 62.

Ungula caballina. Trag. Hist. 418 f.; *Brunf. Herb.* v. 1. 42. f. 41.

Bechium. Tillands, Ic. 24. f.; *Cord. Hist.* 93. 2. f.

Tussilago Farfara. Lin. Sp. Pl. 1214; *Willd.* v. 3. 1967; *Fl. Brit.* 878; *Hook. Scot.* 242; *Bull. Fr. t.* 329; *Woodv. t.* 13.

PROVINCIALY.—*Fole's-fott*; *Colts'foot*; *Horse-hoof*; *Bull's-foot*.

FOREIGN.—*Tussilage*; *Pas d'Ane*, Fr.; *Farfara*, It.; *Una de cabello*, Sp.; *Tassilagem*, Port.; *Huflattisch*, Ger.; *Dwoje lisknik*, Russ.

COLT'S-FOOT is one of the commonest of our native plants; being found in profusion in most parts of the kingdom, and throughout Europe; growing in moist, shady situations, especially on a chalky or marly soil, in waste places, on the banks of rivers, and in gardens, where it frequently proves a very troublesome weed. It is a perennial, flowering from the middle

of March to the end of April; but the leaves do not appear in full luxuriance till the month of May.

The root is very long, frequently penetrating to the depth of several feet, and sending out many slender fibres, which creep horizontally. The scape, or flower stem, appears before the leaves; it is erect, slender, round, woolly, slightly furrowed, six or eight inches high, and clothed with numerous lanceolate scales. Several stems generally issue from the same root, each supporting a single flower, about an inch in diameter, and of a bright yellow colour. The colour of the stem, as well as the scales, varies from pale green to reddish brown, as is well represented by the accurate pencil of Mr. Clarke, in the two varieties figured in the plate. The leaves are radical, cordate, on channelled footstalks, slightly lobed, and toothed; smooth above, with reddish veins; but white and woolly underneath: when young, the leaves are revolute, and covered with a cottony down, which easily wipes off. The scales of the involucre are lanceolate-linear; equal to the length of the disc; erect at first, but afterwards become reflexed. The corolla is compound; the florets are all fertile, those of the ray very numerous; female, twice the length of the disc; of the centre tubular, with five equal segments, furnished with stamens and pistils. The seeds are smooth, oblong, compressed, generally abortive; and crowned with a silvery down, which is sessile, and permanent. The receptacle is naked, flat at first, but afterwards becomes convex. Fig. (a) represents a floret of the ray with the bifid pistil; (b) a floret of the disc, both slightly magnified; (c) the seed, with its pappus or down; (d) a floret of the disc, much magnified and spread; showing the situation of the pistil, with the five united anthers, and the insertion of the filaments into the tube of the corolla. The stem on the right, exhibits the situation of the seeds, with their hairy crowns, and part of the naked receptacle from whence the seeds have been removed.

QUALITIES.—The root is mucilaginous and bitterish; the leaves are inodorous, and have a rough subviscid taste like that of artichokes. “The mucus they contain is yielded to water by coction and evolves; by boiling, a peculiar odour.”

MEDICAL PROPERTIES AND USES.—The dried leaves of this plant generally form the basis of British herb tobacco, and amongst the ancients it was famed for its pectoral and vulnerary properties. Dioscorides,* Pliny, and Galen,† recommend it to be smoked through a funnel or reed, and in a work, “*De Internis Affectionibus*.” Ed. Fæs. p. 532. l. 34, attributed to Hippocrates, the root βηχιον, taken in honey, is recommended for ulcerations of the lungs. Dr. Cullen, on the authority of Fuller, employed its expressed juice in scrophulous cases; administering several ounces a day; and in some instances he thought that it favoured the healing of scrophulous sores: subsequent experience, however, has not confirmed its power over the lymphatic system. During the last century, both the leaves and the flowers were recommended for their demulcent and expectorant virtues; and old Gerard, in his “*Herball, or General Historie of Plants*,” says, “the fume of the dried leaues taken through a funnel, burned upon coles, effectually helpeth those that are troubled with the shortnesse of breath, and fetch their wind thicke and often, and breaketh without peril the impostumes of the breast. Being taken in the manner as they take tobacco, it mightily preuaileth against the diseases aforesaid.” But although Colt’s-foot still retains a place in the London Pharmacopœia, it is seldom used, and independently of its mucilaginous qualities, it may be considered an unnecessary and useless article of the materia medica.

A nostrum, which is well known under the name of “*Essence of Colt’s-foot*,” consists of equal parts of the *Balsam of Tolu*, and the *Compound Tincture of Benzoin*, to which is added, double the quantity of *rectified spirits of wine*. This composition, which contains no Colt’s-foot, is certainly one of the most baneful medicines that could have been imposed upon the public

* “Folia suffita vero sicca, ita ut ex iis fumus per infundibulum, hiantē ore excipiat, hauriaturque eos sanant qui sicca tussi, et orthopnœa infestantur; pectoris etiam vomicas rumpunt. Eundem effectum præbet suffita radix.” *Dioscorid. l. c.*

† “Bechium sic nominatum est quod tusses et orthopnœas juvare sit creditum, si quis folia arida aut radicem in prunis urens, ascendentem inde fuliginem inspiratu attrahat.” *Galen Simpl. l. 6.*

in pectoral cases. The injurious tendency of warm resinous substances in pulmonary consumption has been pointed out, in a Dissertation by the late Dr. Fothergill. In a slight cold, the foundation of a suppuration of the lungs is laid by their use, from their increasing the inflammatory disposition, and exciting general fever; and hence it is not improbable, as a popular writer justly remarks, that more fatal cases arise in pulmonary complaints from the officious interference of domestic practice, or the nostrum of the patent warehouse, than from the real incurable nature of such maladies. Consumptive patients who take such an exhilarating, but pernicious cordial, may be compared to a flower on the bank of a river—it blossoms luxuriantly for a season, but the moisture that feeds its roots, undermines its foundation.

Those who wish to exhibit Colt's-foot, on account of its demulcent properties, generally boil a handful of the leaves in two pints of water, to one pint; and the decoction, after being strained, is sweetened with honey, or coarse sugar. The dose is a teacupful.

A kind of tinder or touchwood is, in some countries, made of the roots, impregnated with nitre.



Centaurea — benedicta

CENTAUREA BENEDICTA.

Blessed Thistle.

Class XIX. PENTANDRIA.—Order III. POL. FRUS-
TRANEA.

Nat. Ord. COMPOSITÆ, α, CAPITATÆ, Lin. CINAROCE-
PHALÆ, Juss.

GEN. CHAR. *Receptacle* bristly. *Seed-down* simple,
or feathery, rarely wanting. *Florets* of the radius
funnel-shaped, dilated, irregular.

SPEC. CHAR. *Capsules* doubly spinous, woolly, invo-
lucred. *Leaves* semidecurrent, toothed, spiny.

Syn.—Cnicus sylvestris hirsutior sive Carduus benedictus, Bauh. Pin. 378.

Carduus benedictus, Camer. Epit. 562; Dod. Pempt. 725; Bauh. Hist. 3.
75. t. 2; Raii Hist. 303; Ger. Em. 1171. 2. f.; Park. 530.

Centaurea benedicta, Sp. Pl. Willd. iii. 2315; Woodv. 119. t. 42; Zorn. Icon.
122.

FOREIGN.—Chardon benit, Fr.; Curda santo, It.; Curdo benito, Sp.; Kardo bene-
dictenkract, Benedikten-Flockenblume, Ger.

BLESSED THISTLE is an annual plant, growing spontaneously in the south of France, Spain, Barbary, and the Levant, flowering plentifully in June, and partially until September. It was formerly much cultivated in our gardens, where it thrives as well as in its native soil. Our figure was made from a specimen obtained in the Botanic Garden, Chelsea.

The root is tapering, whitish, branched, and furnished with many slender fibres. The stems are several, a foot and a half high, trailing, roundish, channelled, reddish, woolly, and branched towards the top. The lower leaves stand upon footstalks, but the upper are sessile, alternate, and somewhat decurrent; the whole are oblong, rough, with short hairs, aculeated, sinuated, or almost runcinate, and armed with many sharp spines; of a green colour, with a strong, whitish midrib, paler underneath and reticulated. The flowers are large, bright yellow, solitary at the ends of the branches, inclosed by an in-

volucrum of ten leaves; of these the five external ones are largest. The calyx is oval, imbricated, smooth, woolly, each scale being terminated by pinnate spines, connected with the involucrum by fine cobweb-like threads. The florets of the ray are small and sterile; those of the disc are hermaphrodite, tubular, unequally divided, and toothed at their upper extremities. The filaments are five, capillary, downy, and inserted in the base of the tube of each floret; the anthers are vertical, linear, oblong, united into a cylinder, and longer than the corolla; the style is filiform, and the stigma cloven. The seeds have a paleaceous receptacle, are oblong, brown, striated, and crowned with a hairy seed down or pappus.—Fig. (a) represents a flower detached from the involucrum; (b) the same with the scales of the calyx removed; (c) a floret, &c. magnified; (d) the stamens and anthers; (e) the pistil.

QUALITIES.—This plant has little or no smell, but the taste is intensely bitter. “Its virtues are extracted both by water and alcohol. The watery infusion has a pale, greenish-yellow colour, which is changed to deep olive, by sulphate of iron, and an orange-brown by the pure alkalies, although the carbonates do not affect it. *Nitrate of silver* and *superacetate of lead* produce copious precipitates, and are, therefore, incompatible with this infusion.”

MEDICAL PROPERTIES AND USES.—This plant was formerly in such high repute, that it obtained the name of the “*blessed thistle*,” and was given for the plague, worms and numerous other diseases. If we are to believe Simon Pauli, it has no equal in healing obstinate ulcers, and even cancers; and Arnoldus de Villa-nova lauds it in the same extravagant manner. Notwithstanding that it is now little employed, it is a useful medicine, the strong decoction, or infusion, being capable, like the chamomile, of inducing vomiting. The infusion, less strong, taken while warm, produces a copious determination to the skin, while six drachms of the leaves, to a pint of cold water, forms an elegant bitter infusion, which is very efficacious in loss of appetite and dyspepsia. The dose in powder is from ten to forty grains; of the infusion, a wine glassful every four hours.



Aristolochia Serpentaria.

G. Reid. del.

Weddell sc.

London. Published for the Authors. Oct. 1836.

ARISTOLOCHIA SERPENTARIA.

*Virginia Birthwoot, or Snake-root.**Class XX. GYNANDRIA.—Order IV. HEXANDRIA.**Nat. Ord. SARMENTACEÆ, Lin. ARISTOLOCHIÆ, Juss.*

GEN. CHAR. *Calyx* 0. *Corolla* monopetalloous, ligulate, ventricose at the base. *Capsule* 6-celled, inferior.

SPEC. CHAR. *Leaves* cordate-oblong, acuminate. *Stems* weak, flexuous, round. *Flowers* solitary; peduncles solitary; lip of the corolla lanceolate.

Syn.—*Pistolochia*, sive *Serpentaria virginiana*. *Ger. Em.* 847. 5; *Clus. Hist.* 72; *Catesb. Carol. t.* 29; *Raii. Hist.* 3. p. 394; *Dod. Pempt.* 525.

Aristolochia, polyrhizos *virginiana*. *Moris. Hist.* 3. p. 310. t. 17.

Aristolochia Serpentaria. *Lin. Sp. Pl.* 1363; *Willd. v.* 4. p. 159; *Jacq. Schænbr.* 3. t. 385; *Hort. Kew. v.* 5. p. 226; *Michaux Bor. Amer.* 2. p. 162.

FOREIGN.—*Serpentaire*, Fr.; *Serpentaria de Virginia*, Port.; *Verginische Schlangen—oder Vipernwurzel*; *Arzeneykräftige Osterluzey*, Ger.; *Slang-rod*, Dan.; *Ormrot*, Swed.

SNAKE-ROOT is a native of North America, growing in the woods, according to Pursh, from Pensylvania to Florida; flowering in May and June, and ripening its seeds in September.

It is a perennial plant of humble growth, being most commonly under a foot in height. The root is composed of bundles of small fibres, of a yellowish colour, which changes to brown on drying, attached to a contorted horizontal head, and sends up several small slender stems. These are simple, or slightly branched, somewhat downy, round, flexuous, jointed, about ten inches in height, and often of a reddish tinge. The leaves are alternate, on short petioles, oblong, entire, acuminate, heart-shaped at the base, and three-nerved. The flowers are monopetalloous, of a stiff leathery texture, and of a dull brownish purple

colour; they are solitary, and placed upon long, sheathed, jointed peduncles, which proceed from the lower articulations of the stem. There is no calyx: the corolla, like others of this singular genus, consists of a long contorted tube, bent in the form of the letter S, ventricose at the base, contracted in the middle, having its throat surrounded by an elevated ridge, or border, expanded into a broad triangular lip. The anthers are six in number, sessile, and attached to the under side of the stigma: the germen is inferior, oblong, angular, downy, and covered with a roundish, spreading, convoluted stigma, divided into six parts, and almost sessile. The fruit is a globose, hexagonal, 6-celled capsule, containing several small, flat, greyish seeds. Fig. (a) exhibits a section of the flower; (b) the capsule.

The generic term, *Aristolochia*, is derived from *αριστος*, and *λόχια*, or *λοχεια*, from the supposititious use of the plants it comprises, in disorders attendant on parturition. The genus contains about forty-one species, of which our plant, and nineteen others, are indigenous to the tropical regions of America. One of these, which grows on the borders of Madelena, is said by Humboldt to produce flowers so large as to afford hats for children.

QUALITIES AND MEDICAL PROPERTIES.—The fibrous roots, which proceed from a short, gibbous, horizontal trunk, are of a yellow-ochre colour, when fresh, and become deep brown, or black, when dry. The thick and knotty portion of the root is brown.* It is said that the roots of the *Asarum virginicum*, and of the *Collinsonia præcox*, are sometimes mixed with snake-root. The former are easily detected by being black, and devoid of the odour of snake-root. This odour is aromatic and penetrating, somewhat like that of camphor, or valerian: indeed, Dr. Bidgelow obtained a considerable quantity of crystals of camphor, by distillation. Snake-root has a pungent, bitter taste, and communicates its properties both to spirit and water. Its infusion is not altered by the metallic salts, the mineral acids, nor by alkalies; nor is it precipitated by gelatine

* Barton's *Vegetable Materia Medica*, v. 2. p. 76.

or tannin. The tincture is rendered turbid by the addition of water.

To an analysis by M. Chevallier (Journ. Pharm. v. 565,) it yielded,

Essential oil (Camphor?)

Bitter yellow matter, soluble in water and alcohol.

Resinous matter.

Gum.

Albumen.

Starch.

Various salts.

MEDICAL PROPERTIES AND USES. — As the name *Snake-root* implies, the medical virtues of this plant were supposed to be its power of arresting the effects of serpents' venomous bites. At the end of a book on the plants of Canada, by Cornutus, published at Paris, in 1635, he states that a root had been sent to him from "Notha Anglia," which was called *Serpentaria*, and in the vernacular tongue, *Snagröel*. This root was a very sure safeguard against the bite of a huge serpent in that country, which proved inevitably fatal within twelve hours, unless a good portion of the antidote was swallowed in season; which being done, no one was ever known to be in danger of his life from this cause. Dr. Bidgelow argues, that the honour of being "a specific" in these cases is one of cheap acquisition; there being so many articles which are said to be uniformly successful in destroying the influence of the venom after the bite, that we naturally conclude, that the wounds inflicted by the rattle-snake, and other venomous serpents,* although attended with severe and alarming symptoms, are not so often fatal as is generally supposed.

The opinion formerly prevailed, that a morbid matter pervaded the system in malignant fevers analagous to that of the poison of serpents, and that those medicines which acted beneficially in preventing or arresting the effects of the latter, must

* A detailed account of the peculiar structure and natural history of this tribe of animals, and the remedies which have been suggested to counteract the effects of the poison on the human system, will be given in a SUPPLEMENT to the present work.

necessarily be adapted for the former. It was to this exploded doctrine that we are indebted for the employment of snake-root in all fevers of a typhoid character. In this country, serpentaria has been highly extolled by Cullen, Monro, and other eminent physicians, while, in America, it has received its due meed of praise from Rush, Barton, Bidgelow, &c. By us it is simply employed as a powerful tonic and diaphoretic, and it occasionally acts as an antispasmodic and anodyne.

In some exanthematous diseases, and in the advanced stage of fevers, this root is highly prized, administered alone, or in combination with other tonics. It appears to support the powers of life, and to allay those irregular actions of the nervous system, the consequences of fever, as subsultus tendinum, picking of the bed-clothes, low delirium, and watchfulness. It is supposed that the camphor which it contains contributes to produce these salutary effects. It is generally combined with cinchona, or with wine and opium; and enters into Huxham's, or the compound tincture of bark. We are not aware that it is capable of curing intermittents by itself; but Sydenham states, that in all cases where it is expedient to combine wine with bark, the effects will be much increased by adding serpentaria. It also better enables the stomach to retain the bark. In remittent fever, especially when the remission is obscure, or not easily discerned, snake-root is by some preferred to cinchona, as it is seldom offensive to the stomach, and is free from mischief. In America, where bilious vomiting is a frequent disease, it is found an efficacious remedy, checking the nausea and tranquillizing the stomach. It is given for this purpose in decoction, in doses of a table-spoonful at a time, frequently repeated. Externally, it is used as a gargle in cynanche maligna.

The most common form of exhibiting it, is in infusion, made by pouring a pint of boiling water on half an ounce of the root, and allowing it to steep for two hours in a covered vessel. The dose is an ounce and a half every four hours. Boiling dissipates its volatile qualities. In powder, its usual dose is from gr. x. to ʒss.

OFF. PREP.—Tinctura Serpentariæ, L. E. D.

Tinctura Cinchonæ composita, L. E. D.

Electuarium Opiatum, E.



Dorstenia Contrayerva.

G. Reid, del.

Weddell sc.

London. Published for the Authors Jan. 1830.

DORSTENIA CONTRAYERVA.

*Angular-leaved Dorstenia.**Class XXI. MONÆCIA.—Order II. DIANDRIA.**Nat. Ord. SCABRIDÆ, Lin. URTICÆ, Juss.*

GEN. CHAR. *Receptacle* common, one-leafed, fleshy, in which solitary seeds are nestled, or placed in sockets without attachment.

SPEC. CHAR. *Scape* with a quadrangular receptacle. *Leaves* deeply pinnatifid, palmate, serrated.

Syn.—*Cyperus longus odoratus peruanus. Bauh. Pin. 14.*

Drakena radix. Clus. Exot. 83.

Dorstenia spondylii folio, dentariæ radice. Plum. Icon. t. 119.

Dorstenia quadrangularis. Stokes' Bot. Mat. Med. v. 4. p. 338.

Tuzpalitz. Hernand. Mexic. 147.

Dorstenia Contrayerva. Lin. Sp. Pl. 176; Willd. v. 1. p. 683; Jacq. Ic. v. 3. t. 614; Blackw. t. 579; Ait. Kew. v. 1. p. 268; Woodv. v. 1. t. 51.

FOREIGN.—*Dorstène a feuilles de berce, Fr.; Contrajerva, It.; Contrayerba, Sp.; Contraerva, Port.; Contrayerva; Wurmtreibende Dorstenie; peruanische Giftwurzel, Ger.*

THIS is a perennial plant, a native of South America and some of the West India islands. It has long obtained a place in our pharmacopœias, on account of its supposed alexipharmic virtues; but Dr. Houston has shown that the roots of at least two other species of this genus, viz. *D. Houstonia* and *D. Drakena*, of Willdenow, are promiscuously gathered and exported for those of the officinal *Contrayerva*.

The root is fusiform, compact, rugose, knotty, furnished with many long slender fibres, externally of a brownish colour, and internally whitish. The leaves are radical, three or four inches in length, palmate, deeply laciniated and toothed, pointed, rough, with short hairs, and stand upon longish footstalks, winged towards the leaves. The scapes or flower stems are round,

simple, pubescent, rising to the height of three or four inches, and terminate in a fleshy, expanded, flat, quadrangular receptacle, about an inch long, and three-fourths of an inch broad, placed vertically, covered with many minute, scarcely conspicuous flowers immersed in its substance, and occupying the whole of its disc. The flowers are male and female intermixed. There is no corolla. The calyx of the female flowers, according to Dr. Stokes, is prismatic, with four teeth inflected horizontally; that of the male flowers bipartite, very short, concave, and erect. The filaments are awl-shaped, with roundish anthers. The germen is roundish, with a bifid style, and simple stigmas. The seeds are solitary, triangular, and pointed. The capsule, when ripe, possesses an elastic power, by which the seed is thrown out with considerable force. Fig. (a) exhibits a portion of the receptacle, with the flowers considerably magnified; (b) a seed.

QUALITIES.—The dried roots have an agreeable aromatic smell; a rough, bitterish, warm, acrid taste. By the assistance of heat, both water and alcohol extract its virtues. The watery decoction is of a dark brown colour, and very mucilaginous.

MEDICAL PROPERTIES AND USES.—Contrayerva has generally been regarded as stimulant, sudorific, and tonic. It has been recommended, on the authority of Pringle, Huxham, and other eminent physicians, as a useful remedy in fevers of a typhoid character, in malignant eruptive diseases, and in chronic dysentery, and diarrhœa. It has also been found useful in atonic gout, in chronic rheumatism, and in some other diseases. Dr. Cullen observes, that wine may always supersede the stimulant power of this medicine in fevers, and that debility is better removed by the tonic and antiseptic powers of cold and Peruvian bark, than by any stimulants. The compound powder of contrayerva made up into balls, and called *lapis contrayervæ*, was formerly employed in typhoid fevers, small pox, and other diseases of the malignant kind.

DOSE.—Of the powdered root, the dose may be from gr. xv. to ʒi.

OFF. PREP.—Pulvis Contrayervæ compositus, L.



Morus nigra L.

W. Parkhill sculp.

MORUS NIGRA.

*Common Mulberry-tree.**Class XXI. MONÆCIA.—Ord. IV. TETRANDRIA.**Nat. Ord. SCABRIDÆ, Lin. URTICÆ, Juss.*

GEN. CHAR. Male. *Calyx* 4-parted. *Corolla* 0. Female. *Calyx* 4-leaved. *Corolla* 0. *Styles* 2. *Seed* solitary, invested with the pulpy calyx.

SPEC. CHAR. *Leaves* broad heart-shaped, unequally serrated, somewhat lobed, scabrous above, villose underneath.

Syn.—*Morus*, *Ger. Em.* 1507; *Camer. Epit.* 179; *Matth. Valgr.* 284.

Morus fructu nigro, *Bauh. Pin.* 459.

Morus nigra, *Lin. Sp. Pl.* 1398; *Willd. v. 4.* 368; *Raii Hist.* 1429; *Woodv.* 352. *t.* 129; *Stokes, v. 4.* 378.

FOREIGN.—*Murier noir*, Fr.; *Morone o Gelso*, Ital.; *Moras*, Span.; *Schwarze Maulbeeren*, Ger.

THE Mulberry-tree grows naturally on the coast of Italy and in Persia; but has been cultivated in England since the end of the sixteenth century. It is generally grown as a standard, and flourishes best in a rich deep light soil. The flowers are produced in June, and the fruit ripens in September.

The tree is not lofty, is much branched, and covered with a rough brown or greyish bark. The leaves, which stand upon short foot-stalks, are about five inches long, and four inches and a half broad; numerous, cordate, serrated, rough, of a deep green colour on the upper surface, and paler and tomentose underneath. Both the male and female flowers are produced on the same plant. The *male* flowers are disposed in close cylin-

drical catkins, about an inch and a half long, and composed of several florets: each floret consists of a calyx divided into four deep, ovate, concave segments, inclosing four awl-shaped filaments, having simple anthers. The *female* flowers consist of a calyx which is permanent, resembling that of the male; and both are destitute of a corolla; the germen is roundish and supports two reflexed styles furnished with simple stigmas. The fruit is a large succulent berry, or more properly a compound berry, composed of a number of smaller berries, or *acini*, each containing a single seed, and attached to a common receptacle. Fig. (A) represents the male florets; (*a*) a floret previous to the bursting of the anthers; (*b*) a flower expanded; (*c*) a female floret; (*d*) the fruit.

There are several species of the Mulberry; the *M. alba*, being the one which is cultivated to feed the silk-worm, the silk of which is more coarse when they are fed on the *M. nigra*. Another variety is cultivated in Japan, for the sake of its inner bark, from which paper is manufactured.

QUALITIES.—Mulberries are inodorous, possess a sweet sub-acid taste, and yield a fine rich-coloured juice, which contains tartaric acid, jelly, and mucus.

MEDICAL PROPERTIES AND USES.—This fruit is very grateful to the parched mouths of fever-patients, but is apt to produce diarrhœa if eaten too freely. The syrup is used in gargles, on account of its acidulating properties and its beautiful colour. According to Bergius, the *bark of the root* has been successfully administered in doses of half a drachm, to expel the tape-worm. He also asserts that it acts on the bowels.

OFF. PREP.—Syrupus Mori. *L.*



Bryonia dioica.

W. Clark, del. et sculp.

London, Published by John Churchill, Leicester Square, April, 1828.

BRYONIA DIOICA.

*Red-berried Bryony.**Class XXI. MONÆCIA.—Order V. PENTANDRIA.**Nat. Ord. CUCURBITACEÆ, Lin. Juss.*

GEN. CHAR. Male. *Calyx* 5-toothed. *Corolla* 5-cleft. *Stamens* 3. *Anthers* 5. Female. *Calyx* 5-toothed. *Corolla* 5-cleft. *Style* 3-cleft. *Berry* inferior, many-seeded.

SPEC. CHAR. *Leaves* palmated, 5-lobed, toothed, rough on both sides. *Flowers* racemose, dioicous.

Syn.—*Bryonia alba*, *Raii Syn.* 261; *Ger. Em.* 869; *Woodv. v. 3. t.* 189.

Bryonia aspera, sive *alba*, *baccis rubris*, *Bauh. Pin.* 297; *Mill. Ic.* 47. *t.* 71.

Vitis alba, sive *Byronia*, *Matth. Valgr. v. 2. 620. f.*; *Camer. Epit.* 987. *f.*; *Fuchs. Hist.* 24. *f.*

Bryonia dioica. *Willd. Sp. Pl. v. 4. t.* 621; *Fl. Brit.* 1019; *Engl. Bot. v. 7. t.* 439; *Hook. Scot.* 272.

PROVINCIALY.—*Bryony*; *Tetter Berry*; *White Wild Vine*.

FOREIGN.—*Bryone*, *Couleuvre*, Fr.; *Brionia*, *vite bianca*, It.; *Neuxa alba*, Sp.; *Zaunrube*, *Stickwurz*, Ger.; *Wilde Wyngaard*, *Witte Bryone*, Dut.; *Hundrosva*, Swed.

THIS is an indigenous plant, with annual stems, and a perennial root; very common in dry hedges, and flowering from May to September.

From a large, fleshy root, which is often as thick as a man's thigh, of a white colour, and subdivided below, this species of briony rises with several slender, herbaceous, annual, rough, leafy stems, somewhat branched, and climbing by means of tendrils to the height of several feet. The leaves are large, with five acute lobes, hairy on both sides, rough all over with minute callos tubercles, and disposed alternately on strong hairy footstalks.

The flowers are dioicous, or male and female on different plants; of yellowish white colour, elegantly streaked with green veins, and form a sort of panicle proceeding from the axillæ of the leaves. Miller observed that, after the first two or three years, old roots sometimes produced both fertile and barren blossoms on the same plant, "as is proper to all the other known species of this genus." The calyx of the male flower is monopetalous, bell-shaped, and deeply divided into five narrow, pointed, segments; the corolla is also bell-shaped, and divided into five deep segments, which are ovate and spreading. The filaments are three; short, thick, and furnished with five anthers, of which two are together, united on one of the filaments, and the fifth solitary on the third filament. The calyx and corolla of the female flowers are superior, and resemble those of the male, but are smaller. The germen is inferior, surmounted by a short, strong, erect, 3-cleft style, with large, cloven, triangular, spreading stigmas. The fruit is a smooth, globular, red berry, about the size of a common garden-pea, containing five or six roundish seeds, in pairs, attached to the rind. "The true *Bryonia alba* of Linneus, found on the continent, has black fruit, being called *alba* from its white root, in contradistinction to *Tamus*, the black-rooted Bryony." *—Fig. (a) represents the corolla spread open to show the anthers; (b) the germen, with its styles and stigmas; (c) the ripe fruit.

QUALITIES AND CHEMICAL PROPERTIES.—The fresh root, which is spongy, has an extremely disagreeable odour, and a particularly nauseous taste, which appear to depend principally upon an acrid principle that can be so dissipated by repeated washings with water, as to leave a fecula similar to what is yielded by the potatoe; and which, in the scarcity which followed the French revolution, was resorted to as food, and found to be very nutritious. Vauquelin has lately analysed the root. By maceration in water, and subsequent pressure in a linen cloth, the starch was separated, and obtained in a state of purity. The bitter substance was soluble both in alcohol and water, and appeared to possess the proper-

* Smith's English Flora, v. 4. p. 130.

ties of pure bitter principle. It was found also to contain a considerable portion of gum ; a substance which is precipitated by infusion of galls, and which Vauquelin denominates vegeto-animal matter, some woody fibre, a small portion of sugar, and a quantity of super-malate of lime, and phosphate of lime.

POISONOUS EFFECTS.—Given in over-doses, the root of bryony exerts a powerful influence on the lining membrane of the stomach, and bowels ; producing all the effects of an acrid cathartic, such as vomiting, purging, intense pain, and inflammation and all its consequences. Orfila infers from numerous experiments—

1st. That the bryony root acts upon men in the same manner as upon dogs.

2nd. That its effects may depend on the inflammation it produces, and the sympathetic irritation of the nervous system, rather than on its absorption.

3rd. That its deleterious properties reside especially in the portion which is soluble in water.

TREATMENT.—First evacuate the stomach by ipecacuanha powder, suspended in warm water. After the stomach has been evacuated, give repeated doses of the sulphate of magnesia, dissolved in almond emulsion, which will not only operate on the bowels, but serves to defend the mucous membrane of the intestinal canal from the acrid effects of the poison. Should inflammatory symptoms supervene, the usual antiphlogistic treatment is to be practised.

MEDICAL PROPERTIES AND USES.—This root was formerly much extolled as a cathartic and diuretic. Its medical properties, evidently depend upon its acrid juice, which is most powerful in the autumn and spring ; the root must therefore be procured at one of these periods, and to insure its uniform operation, we always choose the latter period. The root should be cut in thin slices and dried in the sun, or in a warm room ; by which means some of the acrid qualities are dissipated : we then have a remedy of no little value for dropsical cases, as we can testify from pretty extensive

experience. Of the dried root we infuse half an ounce in a pint of boiling water; to which may be added one ounce of spirit of Juniper. Of this mixture we generally prescribe a wine-glassful every four hours; whereby we obtain numerous watery evacuations, and a copious secretion of urine. Like all other irritating purgatives, it occasionally acts too powerfully; when its use must be suspended, and cordials or opiates resorted to. It has been much commended for its effects in mania, and amongst others by Sydenham. Dioscorides and Pliny, were in the habit of giving an ounce of the juice for epilepsy: some of the moderns have done the same; and to procure it, it is customary to cut off the top, and scoop a hole in the root; which in the course of a few hours will be filled. Matthioli recommends it for hysteria. Many accounts partaking of the marvellous, are extant of its virtues in expelling the parasites of the abdomen; * and it was once much celebrated as an emmenagogue. † Withering, says that a decoction made with a pound of the fresh root, is the best purge for horned cattle; and it is a common practice in Norfolk, to give small quantities to horses in their corn, to render their coats glossy and fine. The recent root is capable of blistering the skin, and has been found useful, if externally applied, to rheumatic affections of the muscles and joints, ‡ also for removing extravasated blood. “In hospitals,” says Dr. R. Pearson, “it would very well supply the place of jalap, and thus lead to considerable savings.”

The *dose* of the powder is from half, to one drachm.

* Vide Takius, qui magna bryoniæ tribuit: quin etiam conducit singulariter, ad lumbricos, et variarum formarum vermes, lacertas, bufones, aliâque animalcula subinde in hominum intestinis reperibilia enecanda et expellenda. Hoc non tantummodò duobus egregiis experimentis confirmat Freitagus, sed etiam D. Michaëlis ex ancilla Altenburgica bufones et ranas deturbavit bryenia et irride nostrate.

Ettmuller *Opera Omnia*, Vol I. p. 608.

† Menses ac fœtum pellit, abortumque sæpe procurat. *Ibid.*

‡ Vel radix recens contusa, cum oleo lini subacta, et tepidè applicata, dolores ischiadicos aliosque; arthriticos tollit . . . et in omni sanguine grumoso dissolvendo, et contusionibus; sicut et folia contusa in livore applicata sanguinem grumosum discutiunt. *Ibid.*



Arum maculatum

W. Clark, del. et sculp.

London: Published by John Churchill, Leicester Square, June 1827.

ARUM MACULATUM.

*Common Arum.**Class XXI. MONÆCIA.—Ord. VII. POLYANDRIA.**Nat. Ord. PIPERITÆ, Lin. AROIDEÆ, Juss.*

GEN. CHAR. *Spathe* 1-leaved, cowled. *Corolla* 0.
Spadix androgynous, naked above, bearing stamens
 in the middle, and germens at the base.

SPEC. CHAR. *Stem* none. *Leaves* radical, hastate,
 entire. *Spadix* club-shaped.

Syn.—*Arum Raii* *Syn.* 266. *Bauh. Hist.* ii. 783.

Dracontium minus, *Dod. Pempt.* 327.

Arum vulgare, *Ger. Em.* 834. *Park.* 373.

Arum maculatum, *Lin. Sp. Pl.* 1370. *Willd.* iv. 4779. *Fl. Brit.* iii. 1024.

PROVINCIALY.—*Lords and Ladies. Wake Robin. Cuckow-pint.*

FOREIGN.—*Gouet*, Fr.; *Aro*, Ital.; *Arönswurzel*, Ger.

THIS is a well-known perennial plant, a native of many parts of Britain, generally growing under hedges, remarkable for its acrimony, and the singular structure of its fructification. “At the first approach of spring,” says Sir James E. Smith, “the verdant shining leaves of *Arum* are seen shooting up abundantly wherever any brushwood protects them from the tread of men or cattle. In May, the very extraordinary flowers appear. In autumn, after both flowers and leaves have vanished, a spike of scarlet berries, on a simple stalk, is all that remains; and few persons are aware of the plant to which they owe their origin.”

The root is tuberous, about the size of a chesnut, with numerous capillary fibres, brown externally, and white and fleshy within. The leaves, which spring immediately from the root, are large, hastate, entire, smooth, of a dark green colour,

frequently spotted, and supported on long-channelled footstalks. The flower-stem is a simple scape, obscurely channelled, and terminated by the spathe, inclosing the parts of fructification. The spathe (*a*) is erect, pale green, sometimes spotted, very concave and pointed. The spadix (*b*) is club-shaped, obtuse, of a deep purple colour; at its base are several roundish germens and a ring of sessile anthers; above these is placed many roundish bodies, terminated by longish filaments; these Linnæus called the nectaries. The fruit (*c*) consists of several globular berries, of a bright scarlet colour when ripe, crowded on an oblong spike, each berry containing two or more seeds.—Fig. 1 and 3 represent the abortive germens, or nectaries; 2, the sessile anthers; 4, the germens.

QUALITIES.—The root is nearly white, and free from smell. When recent, it is very acrimonious; so much so, that on tasting a small piece, an insupportable sensation of burning and pricking was produced, which lasted several hours. Applied to the skin, it produces blisters: but its acrimony is lost by drying, which leaves the root a farinaceous substance, which in some countries has been converted into bread; and being soponaceous, is used in France, under the name of *Cypress Powder*, as a cosmetic. Water and spirit abstract the acid principle, but derive no virtues from it: it is entirely on the acrid properties that its medical virtues depend. “The expressed juice reddens vegetable blues, and has been found to contain malate of lime.” Starch has been also prepared from it. Vauquelin found malic acid, in the state of supermalate of lime, in Arum and some other plants.

In some countries, the tuberous roots of many of the Arums, particularly those of *A. Colcasia*, a native of Syria and Egypt, are dried and eaten by the inhabitants, either roasted or raw. In the West Indies, the leaves of some of the sorts, particularly that of the *A. esculentum*, are boiled and eaten as greens; hence the names of Indian-kale and esculent Arum, which have been given to this species. The roots of *A. sagitifolium* are also edible; but they are less generally cultivated. Mr. Loudon, in his valuable *Encyclopædia of Gardening*, informs us, that in the Isle of Portland the common people gather the roots of our

spotted Arum, and send the produce to London, where it is sold as Portland sago.

For medical use, Dr. Lewis recommends the root to be dug up just as the leaves are decaying ; and by being put into sand, in a cellar, they may be preserved the greater part of the year.

POISONOUS EFFECTS.—Warzel, a German practitioner, has administered the fresh root of arum to dogs : they died at the end of from twenty-four to thirty-six hours, without any other symptom than dejection, and the digestive canal was found somewhat inflamed.

Bulliard relates the following case : “ Three woodman’s children ate of the leaves of this plant : they were seized with horrible convulsions. Assistance was procured for them too late ; it was impossible to make the two youngest swallow any thing ; they were bled without success ; clysters were given them, which produced no effect : they died, one at the expiration of twelve days, another at the end of sixteen. The other child was still able to swallow, although with considerable pain, because its tongue was so swelled that it filled the whole cavity of the mouth ; but deglutition became free after being bled. The child was made to drink milk, warm water, and especially an abundance of olive oil. A diarrhoea came on, which saved the child ; it was pretty well restored in a short space of time, but always preserved a very great degree of leanness.”*

TREATMENT.—Our first object should be, to evacuate the stomach by emetics of sulphate of zinc or of copper ; after which, the bowels should be relaxed by the sulphate of magnesia dissolved in almond emulsion, which may be copiously partaken of to allay thirst, and sheath the mucus membrane of the bowels from their acrid contents. Injections of mutton broth may likewise be employed ; and small doses of opium frequently administered, after thorough evacuations have been produced. It is very evident, however, from Bulliard’s statement, that the principal mischief existed in the throat and tongue ; and under such alarming circumstances, we should have applied leeches to

* Histoire des Plantes Vénéneuses de la France, p. 84.

the former, or scarified and compressed the latter. Ice might likewise be applied to the same parts. By adopting these active means, deglutition would most probably be restored, and time afforded for a judicious management of the case.

MEDICAL PROPERTIES AND USES.—Arum is a very powerful stimulant, and when taken internally, in its recent state, it warms the stomach, excites the activity of the digestive organs, promotes perspiration, and exerts an action on most of the secretory organs. It has, therefore, been given with success, in cachetic, chlorotic, and rheumatic complaints, and in various other affections of torpid and phlegmatic constitutions. Bergius, whose authority is not to be despised, speaks of its success in certain kinds of headache; and intermittents are said to have yielded to it. “If the root be given in powder, great care should be taken that it be young, and newly dried, when it may be used in the dose of a scruple, or more, twice a-day; but in rheumatism, and other disorders requiring the full effect of the medicine, the root should be given in a recent state; and to cover the insupportable pungency it discovers on the tongue, Dr Lewis advises us to administer it in the form of emulsion, with gum arabic and spermaceti, increasing the dose from ten grains to upwards of a scruple, three or four times a day. In this way, it generally occasions a sensation of warmth about the stomach, and afterwards in the remoter parts; promotes perspiration, and frequently produces plentiful sweats. The root answers as well for cataplasms for the feet, in deliriums, as garlic does. The London Pharmacopœia of 1788, orders a conserve, in the proportion of half-a-pound of the fresh root to a pound-and-half of double-refined sugar, beat together in a mortar. The dose is a drachm for adults, and it is a good form for the exhibition of the medicine.” But the difficulty of administering the Arum in a uniform manner, prevents it from being often used.

DOSE.—The fresh root may be given in doses of fifteen or twenty grains three times a-day.



Quercus Robur

G. Reid. del.

Weddell. sc.

London. Published for the Authors. Feb. 1830.

QUERCUS ROBUR.

Common British Oak.

Class XXI. MONÆCIA—Order VII. POLYANDRIA.

Nat. Ord. AMENTACEÆ, Lin. 50. Juss. 99.

GEN. CHAR. Male flowers in a *catkin*. *Calyx* in several segments, *Corolla* none. *Stamens* 5 to 10.

Female. *Calyx* double; *outer* inferior, scaly, undivided; *inner* superior, in 6 deep segments. *Corolla* 0. *Style* 1. *Nut* coriaceous, surrounded at the base with the persistent outer calyx.

Syn.—*Quercus latifolia. Raii. Syn. 440.*

Quercus vulgaris. Ger. Em. 1339. 1340. f. f.

Quercus cum longo pediculo. Bauh. Pin. 420; Duham. Arb. v. 2. 202. t. 47.

Quercus. Trag. Hist. 1102. f.; Fuchs. Hist. 229. f.; Matth. Valgr. v. 1. 184. f. Camer. Epit. 111. f.

Quercus pedunculata. Willd. Sp. Pl. v. 4. 450.; Ait. Hort. Kew. v. 5. 294.; Ehrh. Pl. Off. 168.

Quercus Robur. Lin. Sp. Pl. 1414; Fl. Brit. 1026; Eng. Bot. v. 19. t. 1342. Hook. Scot. 373; Mart. Rust. t. 10. Woodv. t. 126.

FOREIGN.—*Chêne commun à longo pedoncules, Fr.; Quercia, Rovera; It.; Roble; Carballo, Sp.; Carvahlo, Port.; Gemeine Eich, Ger.; Eeg, Dan.; Ek. Swed.; Dub.; Quercetum Dubrowa, Rus.; Dab. Pol.; Mesche, Turk.; Pélut, Pers.; Kara Nugi, Jap.*

OF this genus, so valuable for its economical uses, there are only fourteen species described by Linneus. The discoveries of Thunberg, Humboldt, and other distinguished travellers, have so greatly enriched the subject, during the last fifty years, that Willdenow, who wrote in 1805, describes seventy-six, and Persoon, about the same period, enumerates eighty-two species. Twenty-six species were discovered in North America, by two indefatigable naturalists, father and son, named Michaux; and Humboldt and Bonpland have mentioned twenty-four others, which they found in the course of their travels in South America. Of the one hundred and forty species known at the

present day, more than one half belong to America. The various species of oak are mostly large trees ; some are evergreens, and others are deciduous, or lose their leaves during the winter. In this country we have two distinct species of oak, the *Quercus Robur*, and the *Quercus sessiliflora* ; the former of which affords the best timber, and is by far the most common in the woods and hedges of Britain ; flowering in April.

The British Oak, it is well known, is a majestic forest tree, distinguished above all others for the slowness of its growth, its great size, longevity, and use. In woods, as Professor Martyn justly observes, it rises to a considerable height ; but singly, it is rather a spreading tree, sending off horizontally immense branches, which are much divided, more or less wavy, and covered with a rough brown bark. The leaves are deciduous, alternate, nearly sessile, or on very short footstalks, obovate, oblong, smooth, irregularly sinuated, with obtuse, rounded, entire marginal lobes ; their upper surface of a rich shining green, paler, and slightly glaucous underneath. The *male* or barren flowers are in numerous, pendulous, stalked, yellowish, downy catkins, two inches long, from scaly buds ; the *female* on axillary, simple stalks, few, scattered, sessile, small, and greenish tinged with brown. The calyx of the male flower is a scale of one leaf, bell-shaped, and generally five-cleft ; that of the female is double ; the outer one coriaceous, entire, becoming subsequently enlarged, and constituting the hard, tubercled, woody cup of the nut or acorn ; the inner of one leaf and divided into six pointed, downy segments, closely surrounding the base of the germen. The filaments are about ten, longer than the calyx, and supporting roundish 2-lobed anthers. The germen is ovate, crowned with a short conical style, and three obtuse recurved stigmas. The fruit is an oval, coriaceous, smooth nut, fixed to the inside of the outer calyx, as in a shallow cup, and dropping from it when the nut ripens in autumn. Fig. (*a*) represents a sprig with the male catkins ; (*b*) the same with the female flowers ; (*c*) a male flower magnified ; (*d*) a female flower magnified ; (*e*) the nut or acorn ; (*f*) the same divided longitudinally.

The knotty Oak of England, the “unwedgeable and gnarled oak,” as Shakespeare called it, affords the strongest and most durable timber known. The oak timber imported from America, and that which is grown in the central parts of continental Europe, is greatly inferior to that of the true British Oak, especially in closeness of grain, hardness, and resistance of cleavage. It has, indeed, been supposed, that the inferiority of some of our more recently built ships, and the ravages which the dry-rot is making among them, have arisen from the substitution of foreign oak for that of native growth. It is a fact well known to botanists, but of which our planters and purveyors of timber appear to have no suspicion, that there are two distinct species of Oak in England, the *Quercus Robur*, and the *Q. sessiliflora*, the former of which affords a valuable wood, little liable to rot; the other a wood of inferior quality, very apt to decay, and not half so durable. It is therefore a subject of national importance to distinguish them, especially when the timber is to be applied to the purposes of naval architecture. The sessile-fruited Oak (*Mart. Rust. t. 12.*) is less common than the species here figured, but it occurs frequently in the New Forest and other parts of Hampshire, in many parts of Norfolk, and about London. It may readily be discriminated from the British Oak, by having its petioles or acorn-stalks short, and the leaf-stalks long; whereas the *Robur* has the acorn-stalks long, and the leaf-stalks short. Professor Martyn, who has given some interesting remarks on this subject says, “The Durmast Oak differs very widely from the true British species, not only in the essential characteristics of the petioled leaves and sessile clustered acorns, but in several other remarkable circumstances. The whole tree has much the air of the chesnut, and is of a freer growth than the true Oak; the bark is of a lighter colour and smoother, the wood not so strong or of so firm a texture; the leaves are rather serrate than sinuate about the edge, with five, six, or seven sharp indentures on each side; whereas in the common oak there are only three or four, forming wide sinuses, blunt at the end; they are of a yellow green on the upper side, and a pale green on the under. In the specimens which we received in October, the under surface was of a hoary grey colour, with the ribs inclining to purple; an appearance which the leaves of the common Oak never put on. These, together with the flowers and fruit, are said to appear later in the season than those of the first sort; and the leaves continue longer on the trees, sometimes the whole winter. Now if it should appear from experience,” continues the learned Professor, “that the characters here delivered are permanent; and that Oak trees which bear sessile leaves, with the acorns or fruit-stalks, are of a superior quality as to their timber, to those which have the leaves or foot-stalks with sessile fruits; then we shall have an easy clue to direct us in our choice of trees for planting: for although it will be many years before the trees will be known by their fruit, yet they may from the first be distinguished by their leaves; and when planters become better acquainted with them, they will see the difference immediately by their air and habit.”

With respect to age, the Oak exceeds any other tree, except perhaps the yew; even the timber is useless for purposes of art till it has grown

from fifty to seventy years. The age to which it can continue to vegetate has commonly been estimated at three hundred years; but tradition carries some trees which have escaped the axe to a period much more remote. In the New Forest, Evelyn counted, in the sections of some trees, three or four hundred concentric rings or layers of wood, each of which is supposed to record a year's growth. Not many years ago, the oak in Torwood Forest, in Stirlingshire, supposed to be the largest tree in Scotland, under the shadow of which Sir William Wallace used to assemble his army to oppose the tyranny of Edward, is said to have been still standing. Mr. Gilpin, in his work on Forest Scenery, speaks of a "few venerable oaks in the New Forest, that chronicle upon their furrowed trunks ages before the conquest."

The oak attains a very great size, and, when it stands alone, specimens are sometimes met with whose trunks exceed forty feet in circumference. An oak, figured in the second edition of Evelyn's *Silva*, was felled at Withy Park, Shropshire, in 1697, which was nine feet in diameter, without the bark; there were twenty-eight tons of timber in the body alone; and the spread of the top, from bough to bough, was one hundred and forty-four feet. The Greendale Oak, in Welbeck Park, is supposed to be about seven hundred years old; and measures thirty-five feet three inches in circumference near the base. The Framlingham Oak (Suffolk), used in the construction of the Royal Sovereign, was four feet nine inches square, and yielded four square beams, each forty-four feet in length. Dr. Plott mentions an oak at Norbury, which was of the enormous circumference of forty-five feet; and the same author mentions another at Keicot, under the shade of which four thousand three hundred and seventy-four men had sufficient room to stand. The Boddington Oak, in the vale of Gloucester, in 1783, was fifty-four feet in circumference at the base; and the hollow cavity was sixteen feet in its largest diameter, with the top formed into a regular dome. The Fairlop Oak, in Hainault Forest, in Essex, though inferior in dimensions to the last mentioned, was a tree of immense size; the tradition of the country traces it half way up the Christian æra. A few years ago its branches overspread an area of nearly three hundred feet; it is now entirely destroyed, but it is still customary, on the first Friday in July, to hold a fair on the spot where it formerly stood. Damorys' oak, in Dorsetshire, was the largest oak of which mention is made. Its circumference was sixty-eight feet; and the cavity of it, which was sixteen feet long and twenty feet high, was, about the time of the Commonwealth, used by an old man for the entertainment of travellers. The dreadful storm in the third year of the last century shattered this majestic tree; and in 1755 the last vestiges of it were sold as firewood. On the north-west prospect of Whinfield Forest, near Appleby, in Westmoreland, stood an oak, not many years ago, called the "Three-brethren tree," whose circumference was forty-two feet near the base; and we are informed that in Lowther woods, in the same county, there are oaks of still greater dimensions.

From Domesday Book, it appears that in the time of William the Conqueror the Oak was chiefly prized for its acorns, and the value of the woods in several places is ascertained by the number of hogs they

would fatten. During the time when the Saxons held sway in this country, the fattening of hogs upon acorns was accounted so important a branch of domestic economy, that, about the close of the seventh century, King Ina enacted the *panage laws* for its regulation. It is not recorded that acorns were ever used as human food in this country, but they are still said to be so used by the poorer peasants in the south of Europe. Pliny informs us, that in his time acorns were brought to table in Spain for the dessert; and Cervantes, in his romance of Don Quixote, not only sets them before the goatherds as a dainty, but picks out the choicest for the countess herself. The oaks with edible acorns are not however of the same species as the British Oak. The Italian Oak, which Virgil represents as the monarch of the forest, and of which he has given such a splendid description in the second book of his Georgics, bore fruit which was used as food. The *Quercus ilex*, the common Evergreen Oak, or Holm Oak, which occurs in various parts of the south of Europe, and north of Africa, bears fruit, which in its flavour is said to resemble that of our sweet chesnut. There is another large handsome evergreen Oak, *Quercus Ballota*, or sweet-acorn Oak, a native of Barbary and Spain, of which the acorns are eatable and very palatable, either raw or roasted. During the late war in Spain, the French armies, were very fortunate in finding subsistence upon the ballota acorns, in the woods of Salamanca. The *Quercus castanea*, the yellow Oak, which is found in all the fertile countries to the west of the Allegany mountains, and on the banks of the Delaware, yields abundance of acorns, which are sweet, and very palatable. Another American species *Q. bicolor*, or swamp white Oak, also produces acorns, which are sweet and edible, like those of the *ballota*, *Prinus*, *cuspidata*, *Esculus*, and several others.

QUALITIES AND CHEMICAL PROPERTIES.—Oak bark has no smell, but a rough astringent taste, which it yields to alcohol and water. The infusion contains both gallic acid and tannin, the latter in considerable quantity. An ounce of bark afforded, in Sir H. Davy's experiments, one hundred and eleven grains of solid matter by lixiviation, of which seventy-seven were tannin; but the proportions vary in quantity according to season and the age of the tree which yields the bark. Cut in the spring, it will be found to contain four times as much tannin as when obtained in winter.

MEDICAL PROPERTIES AND USES.—Oak bark is a powerful astringent and tonic, and united with bitters and aromatics has been recommended in intermittents. When Cinchona bark cannot be obtained, and the stomach rejects its preparations, oak bark may be found of service, but the former is so superior to all its competitors, that oak bark is but a poor substitute. It

is more useful in internal passive hæmorrhages and diarrhœa, and may be given in doses of from fifteen to thirty grains every six hours. A strong infusion or decoction is often employed as an astringent gargle for cynanche and relaxation of the uvula ; as an efficacious injection in prolapsus uteri, leucorrhœa and profuse menorrhagia ; and as a fomentation in prolapsus ani and hæmorrhoidal affections.

OFF. PREP.—Decoctum Quercus, L. E.

Extractum Corticis Quercus, D.



Quercus infectoria.

G. Reia. & C. M. Curtis. del.

London. Published for the Authors: Feb. 1. 1830.

Wells

QUERCUS INFECTORIA.

Oriental Gall Oak.

SPEC. CHAR. *Leaves* ovate-oblong, smooth on both sides, deeply toothed, somewhat sinuated, deciduous. *Calyx*, tessellated. *Fruit*, sessile. *Nut*, elongated, nearly cylindrical.

Syn—*Quercus infectoria*. *Olivier Voy. dans L'Empire Othoman. Atl. t. 14, 15 ; Willd. Sp. Pl. v. 4. p. 436.*

Farber Eiche. *Nom. Triv. Willd.*

OLIVIER appears to have been the first who clearly pointed out this species as being the tree which produces the nut-galls of commerce, although *Quercus cerris* is still retained by the Edinburgh college. The gall-oak, according to this distinguished traveller, is scattered throughout all Asia Minor, from the Bosphorus as far as Syria, and from the coasts of the Archipelago, as far as the frontiers of Persia.* Captain Kinneir says that the tree is common in Kurdistan and Armenia ;† and General Hardwicke, in the narrative of his journey to Sirinagur, asserts that he found this *Quercus* growing in the neighbourhood of Adwaanie ;‡ the greater part, however, of the galls found in the Indian Bazaars are supposed to be the product of Persia, from whence they are brought by the Arab merchants. This oak seldom exceeds the height of six feet, and the stem is crooked, with the habit of a shrub rather than a tree. The leaves are an inch and a half long, on short petioles, deciduous, of a bright green colour, and smooth on both sides, but paler beneath ; with their serratures deep and broad, not acutely pointed. The fruit is solitary, and

* See *Olivier's Travels*, (translation,) p. 41.

† *Geographical Memoir of the Persian Empire*, p. 258.

‡ *Asiatic Researches*, v. 6. p. 376.

black colour, and forms the well-known substance, ink. The infusion reddens the vegetable colours from the action of the gallic acid, which may be obtained from it in considerable quantity, merely by sublimation. The solution contains a large quantity of tannin, as it gives a very copious precipitate with solution of gelatin. It has also been supposed to hold dissolved extract and mucilage: the existence of the former is doubtful, and Dr. Bostock's experiments prove that there is no sensible portion of the latter. The strongest infusion Sir H. Davy could obtain at 56° Farh., by repeated infusion in distilled water, of the best Aleppo galls, broken into small pieces, was of the specific gravity of 1.068. Four hundred grains afforded by lixiviation 185 grains of dry solid matter, of which 130 were tannin, 31 gallic acid, 12 saline and earthy matter, and 12 *supposed* to be mucilage and extractive matter. According to Prof. Branchi, galls by distillation with water afford a concrete vegetable oil, and M. Chevereul in 1815 also discovered in them a new acid, which M. Braconnot has absurdly proposed to call *ellagic*, from the word *galle* reversed.

MEDICAL PROPERTIES AND USES.—Galls being most powerful astringents, have been occasionally prescribed when such remedies are indicated, as in long protracted and obstinate diarrhæas, intestinal hæmorrhages and intermittents; and when judiciously combined with tonics and aromatics, have been found useful. Much caution is required in administering so powerful a medicine; and the dose should not exceed ten grains or a scruple three times a day. An infusion made with two drachms of bruised galls to twelve ounces of boiling water, may be used as an injection, and in conjunction with a small portion of spirits of wine forms a good gargle for relaxation of the uvula and surrounding parts. One drachm of the powder to eight of lard, constitutes an efficacious application to sore nipples and chronic piles; and to increase its utility in the latter complaint, a little opium is occasionally added. An infusion of galls is the best remedy against an overdose of ipecacuanha, almost immediately rendering it inert.

OFF. PREP.—Tinctura Gallarum, E. D.



Pinus sylvestris

PINUS SYLVESTRIS.

The Wild Pine, or Scotch Fir.

Class XXI. MONÆCIA.—Order VIII. MONADELPHIA.

Nat. Ord. CONIFERÆ, Lin. Juss.

GEN. CHAR. *Male fl.* in a catkin, naked. *Calyx* 0. *Corolla* 0. *Stamens* numerous, on a common stalk. *Female fl.* in a catkin, of close, rigid, 2-lipped, 2-flowered, scales. *Seeds*, 2 to each scale, winged.

SPEC. CHAR. *Leaves* rigid, in pairs. *Young cones* stalked, recurved. *Anthers* with a very small crest.

Syn.—*Pinus sylvestris*, foliis brevibus glaucis, conis parvis albentibus, Raii Syn. 442; *Duham. Arb.* v. 2. 125. t. 30.

Pinus sylvestris vulgaris, *Bauh. Hist.* v. 1. 253. f.

Pinus sylvestris montana, *Camer. Epit.* 40. f. *Matth. Valgr.* v. 1. 89. f.

Pinus n. 1661. *Hall Hist.* v. 2. 317.

Pinus sylvestris, *Lin. Sp. Pl.* 1418; *Willd.* v. 4. 494; *Fl. Brit.* 1031; *Eng. Bot.* v. 35. t. 2460.; *Hook. Scot.* 275; *Ait. Kew. ed.* 2. v. 5. p. 314.; *Woodv.* 570. t. 207.; *Ger. Em.* 1356. f.; *Lambert Pin.* 1. t. 1.

FOREIGN.—*Pin*, *Pin Sauvage*, Fr.; *Pino*, It.; *Pino*, *Pino silvestre*, *Pino Balsam*, Sp.; *Pinheiro*, *Pinheiro Bravo*, Port.; *Kiefer*, *Kiene*, *Kienbaum*, Ger.; *Tall*, *Furu*, Swed.; *Furr*, *Fyrretræ*, Dan.; *Sosna*, Russ.; *Sonobar*, Arab.

THE Scotch Fir, which is the only native species of the genus *Pinus*, grows spontaneously on the dry stony mountains of Scotland, Norway, and other countries in the north of Europe; flowering in May, and ripening its seeds two years afterwards. It flourishes best in a cold climate, on a poor sandy soil, and lives to the age of four hundred years or more. The wood is known by the name of *red deal*,* and its value, as well as that of the

* The *white deal* is from the *Pinus Abies*, which, according to Mr. Coxe, is most demanded because no country produces it in such quantities as Christiana and its vicinity.

tar, pitch, and turpentine, afforded by this species, are well known. The tree is planted on waste grounds and barren hills in several parts of our island as a shelter, or as a profitable object of culture, "though not one of the most agreeable ornaments to a country where any thing else will grow."

This tree, though lofty, seldom grows straight; the branches are numerous, oblique, and like the stem, covered with a rough brown bark, which scales off in large thin flakes. The leaves, which surround the ends of the branches, stand in pairs, and are united at the base with a tubular, membranous sheath; they are equal, about two inches long, linear, narrow, somewhat pointed, minutely serrated, evergreen; their upper surfaces are dark green, rather concave, originally clapped together, but soon separating: the under convex more glaucous and striated. The flowers are terminal, erect; the *males* aggregated, spiked, sulphur-coloured, soon surmounted by a protruding leafy branch; each flower having several chaffy, concave, leafy *bracteas* at its base, which some have denominated a 4-leafed calyx; there is no corolla, except the spreading scales of the flower-bud be regarded as such; the filaments are very numerous, collected below into a cylindrical column, and furnished with oblong, wedge-shaped anthers, of two cells, crowned with a jagged, membranous crest. The *female* flower is an ovate, roundish catkin, variegated with green and purple, of numerous, imbricated, 2-flowered scales. There is neither calyx nor corolla. The germens are two at the base of each scale, with a single style to each germen, and a simple obtuse stigma. The year after impregnation the young fruit becomes lateral, stalked, and reflexed green, of a more ovate figure; and the second year ripens into one ovate, pointed, hard, tessellated, but unarmed woody cone, whose dry scales finally gape, and allow the dispersion of the winged seeds.—Fig. (*a*) represents the Male catkin with its bracteæ; (*b*) the anthers; (*c*) the crest of the anthers; (*d*) the Female catkin with its bracteæ; (*e*) a separate scale; (*f*) a ripe cone; (*g*) the same expanded by drought; (*h*) the seed with its wing.



Pinus Balsamea

Widdell 1828

LXXIV

PINUS BALSAMEA.

Balm of Gilead Fir.

SPEC. CHAR. *Leaves* solitary, flat, imperfectly 2-ranked. *Cones* cylindrical, erect, with short-pointed scales. Crest of the *anthers* pointless.

Syn.—*Abies balsamifera*, Mich. *Boreal-Amer*, v. 2. 207.; Mich. *Arb. For.* v. 1. 145. t. 14.

Abies taxi folio, odore Balsami Gileadensis, Du Hamel. *Arb.* v. 1. 3. n. 3.

Pinus Balsamea, Lin. *Sp. Pl.* 1421.; Willd. n. 27.; Ait. *Kew.* v. 5. p. 319. n. 23; Lambert 48. t. 31.

FOREIGN.—*Le Baumier de Gilead*, Fr.; *Die Balsamtanne*, Ger.

THE Balm of Gilead Fir has its natural abode in the northern provinces of America, but chiefly in Nova Scotia, Canada, New England, and the Allegany mountains, in high cold situations; flowering in May, and ripening its seeds in September. It has long been cultivated for curiosity in England, but in general, though it attains to a considerable height, does not thrive well, and scarcely survives above twenty years. Some of the largest trees of this species are said to be at Woburn, the seat of the Duke of Bedford, and at Warwick Castle, the seat of the Earl of Warwick; but Mr. Lambert's specimens were procured at Long-leat, Wiltshire, the seat of the Marquis of Bath, the only spot where he has seen this tree in perfection. Its fragrant exudation is the well-known Canada balsam, improperly so called, which is often sold in the shops under the name of Balm of Gilead; though the latter, in its genuine state, is the produce exclusively of the *Amyris gileadensis*.

This beautiful tree, which has very much the habit of the Silver Fir, (*Pinus Picea*,) rises with a tall erect stem. The bark is of a whitish grey colour, and in texture pretty smooth. The leaves are disposed on either side along the branches like the teeth of a comb, but in a double row, the upper one shorter than the other; they are linear, solitary, flat, broader than the former species and less pointed; of a dark green colour, marked with a double glaucous line underneath, and numerous white dots. The *male* catkins are ovate: the crest of the anthers kidney-shaped, pointless, or furnished with short spines, but never bifid; the *females* with numerous ovate, notched, pointed bracteas. The cones stand erect on the branches, and when full grown are of a beautiful violet hue; great quantities of a transparent resin exudes from them, as represented in the plate; the trunk also when wounded yields a similar substance.—Fig. (*a*) Male catkin; (*b*) anthers; (*c*) Female catkin; (*d*) scales of the catkin; (*e*) its bracteolæ; (*f*) scale of the cone; (*g*) seed; (*h*) leaves.



Pinus. Abies.

PINUS ABIES.

Norway Spruce Fir.

SPEC. CHAR. *Leaves* solitary, quadrangular. *Cones* cylindrical; their scales rhomboid, flattened, waved, and notched.

Syn.—*Abies picea*, Matth. *Valgr.* v. 1. 88.; *Camer. Epit.* 47.; *Mill. Dict.* n. 2.

Abies foliis solitariis apice acuminatis, Lin. *Hort. Cliff.* 449.; *Fl. Suec. ed.* 1. 789.; *Fl. Lapp. ed.* 1. n. 347.; *Dalib. Paris*, 295.

Pinus foliis solitariis, tetragonis, mucronatis, n. 1656. *Hall. Helv.*

Pinus Abies, Lin. *Sp. Pl.* 1421.; *Willd. v.* 4. n. 32.; *Ait. Hort. Kew. ed.* 2. v. 5. n. 18.; *Huds. Fl. Ang.* 424.; *Scop. Carn.* n. 1194.; *Fl. Dau. t.* 193.; *Villars Dauph. v.* 3. 810.; *Woodv.* 573. t. 208.; *Lambert* 37. t. 35.

FOREIGN.—*La Pesse*, *Pece*, *Picea*, *Epicia*, *Le Faux Sapin*, *Le Sapin Rouge*, Fr.; *Picea*, *Sampino*, It.; *Picea*, *Pinabeto*, *Pinabete*, Sp.; *Peuce*, *Abeto Negro*, Port.; *Gran*, Dan. and Swed.; *Harstboom*, Dut.; *Jel*, Russ.; *Xan mo*, Chin.

THE Norway Spruce Fir is one of the loftiest of the European trees, growing sometimes to the height of one hundred and fifty feet. It is a native of the mountains in various parts of Europe, as well as northern Asia, in places watered by alpine rills, where it attains a large size, and with its spreading branches and elegant pyramidal form, makes a magnificent appearance. In this country it has been long cultivated, not only as an ornamental tree, but also on account of the wood, which is one of the most valuable sorts of deal. The wood is chiefly imported from Norway; but Mr. Lambert informs us, that that which is grown in England is supposed to be most

durable, and particularly esteemed for making ladders. The long sweeping fan-like branches, often broken down by loads of snow, or by the effect of boisterous winds, are said to have a grand effect in alpine landscapes, and have been well employed in the sublime compositions of Salvator Rosa, and the German engravers. Burgundy pitch, *Resina Abietis* of our modern pharmacopœias, is yielded by this species. It flowers in April.

The tree is usually straight, pyramidal, and covered with a reddish, scaly bark. The leaves are copiously scattered all around the branches, ascending, somewhat imbricated, each scarcely an inch long, on a short stalk, smooth, linear, curved, bluntish, with four rather unequal angles, shining on the upper surface, and of a dusky green colour. In summer, after a long continuance of dry weather, most of them decay and fall off. There are no stipulas. The flowers are terminal; the *male* catkins most plentiful; they are on short foot-stalks, erect, ovate, cylindrical, and of a tawny red; their bractœas numerous, spreading, longer than the common filament or basis of the stamens; the anthers yellow, their crest crimson, roundish, kidney-shaped, deeply and acutely jagged. The *female* catkins are sessile, oblong, erect, of a rich crimson. The strobiles or cones are pendulous, solitary at the end of each branch, a span long, nearly cylindrical, of a purple colour, and sometimes green before they are ripe, smooth, of numerous imbricated, flattish, rigid, rhomboid scales, waved at the edges, and notched at the point. The seeds are small, rather flattened, and oval, with two thin elliptical-oblong wings.—Fig. (*a*) the anthers; (*b*) female catkin; (*c*) scale of the same; (*d*) seeds; (*e*) leaf.

PINUS LARIX.

Common, or White Larch-tree.

SPEC. CHAR. *Leaves* tufted, deciduous. *Cones* ovate-oblong; the margins of their scales reflexed, jagged. Scales of the *female* catkin fiddle-shaped, prominent in the full-grown cone.

Syn.—*Larix*; *Bauh. Pin.* 493; *Matth. Valgr. v. 1.* 95. *Ger. Em.* 1365; *Camer. Epit.* 45, 46.

Larix folio deciduo conifera, *n.* 1658. *Hall. Hist.*; *Du Hamel Arb.* 1. 131. *f.*

Pinus Larix Lin. Sp. Pl. 1420; *Willd. v. 4. n.* 24; *Woodv.* 576. *t.* 210; *Lambert*, 53. *t.* 35.

FOREIGN.—*Le mélèze, melese*, Fr.; *Larice*, It.; *Larice, Alerce*, Sp.; *Larico*, Port.; *Lerketræ*, Dan.; *Listweniza*, Russ.

THE White Larch is a native of the Alps of Switzerland, Italy, Germany, and according to Miller, of Siberia. It has been long cultivated very extensively, and with great advantage, in this country; flowering in March and April, before the leaves fully expand.

The Larch is a tree of quick growth, rising to the height of fifty feet or more, with wide spreading branches, whose extremities droop in the most graceful manner. They are adorned with numerous narrow, spreading, linear, bluntish, entire, soft, bright-green leaves, which spring in pencil-like tufts, from alternate, perennial cup-like, scaly buds. The leaves are deciduous,

about an inch long, and have no other stipulas than the scales of the bud. From similar buds spring separately, on the same branch, the male and female flowers; the latter only accompanied by a few leaves. The bracteas to each flower are numerous, recurved, obtuse, with fine fringe-like teeth, chaffy, reddish-brown, and deciduous. The *male* flowers are in small lateral, cylindrical catkins, yellow, drooping, about an inch long, with the common filament much shorter than the bracteas; the anthers crowded, deflexed, inflated, and two-lobed in front, with a short, recurved point. The *female* catkins are erect, ovate; twice as large as the male, beautifully variegated with green and pink; one lip of each scale is orbicular; the other much larger, fiddle-shaped, reflexed, with a prominent, awl-shaped green point. This lip becomes erect, enlarged, projecting always beyond the orbicular one, which dilates, hardens, and becomes the seed-bearing scale of the cone. The strobiles or cones are erect, rather above an inch long, ovate, obtuse at the apex and purple, when young; and becoming of a reddish brown, when ripe. They have imbricated scales, which are spreading, orbicular, slightly reflexed, and jagged on the edges. In each scale are two-winged seeds.

PINUS SYLVESTRIS.

MOST species of *Pinus*, says Dr. Maton,* may be made to yield, (and many of them produce spontaneously,) a resinous juice, usually called *turpentine*. This appellation more properly belongs to the product of a different genus, called by Linneus, *Pistachia*† of the ancients, which contains the true *Terebinthus*.

* Appended to Mr. Lambert's splendid work on the GENUS *Pinus*, is an elaborate account of the various substances yielded by these trees; which was written by Dr. Maton: and as he has monopolized all the raw materials, and worked them up most admirably, we gladly avail ourselves of his labours.

† The *Τερμινθος* of Theophrastus, (lib. iii. c. 3,) and Dioscorides, (lib. i. cap. 76, from which the word *Terebinthus* seems to have been derived. *Pistachia Tere-*

The juice of Pines, however, like that of the Turpentine trees, has an austere, astringent taste, singular viscosity and transparency, ready inflammability, and a disposition to become more or less concrete. In distillation with water it yields a highly penetrating, essential oil, and the liquor is found to be impregnated with an acid; a bitter, resinous substance remaining behind. The resinous *residua* of the several processes to which the matter extracted from Pines may be subjected, constitute the varieties of *rosin*, *colophony*, &c. There are, also, other products, both native and artificial, much employed in medicine and the arts. The terms commonly attached to these substances are, in general, extremely vague, ambiguous, and inexpressive. Those employed in ancient authors are not to be excepted from the application of this remark; they have occasioned great difference of opinion among commentators, and, in some instances, they remain to this day undefined; but, on the whole, they were used with more precision, perhaps, than is observable in the popular discourse, or in the regular *pharmacopæias* of modern times.

COMMON TURPENTINE (*Resina liquida pinea*) is the produce of the Scotch fir; is more coarse and dense than any other sort; and has an opaque, light brown colour. Its consistence is that of honey. The taste very acrid, hot, and disagreeable; and the smell much less pleasant than either the Venice, or the Strasburg turpentine.

The artificial extraction of the resinous juice of the Pine, was practised by the ancients, in a manner very similar to that which obtains at present. Theophrastus (lib. ix. cap. 2) gives a particular account of the several trees employed for this purpose in his time, of the proper season of the year for commencing the process, and of the several variations in the qualities of the juice; and though commentators have not been able to refer all

binthus yields the resinous juice called in the shops *Cyprus* and *Chio* turpentine, the superiority of which to all the products of the Pine tribe, was well known to, and described by, most of the ancient writers on the *Materia Medica*. Genuine turpentine is almost colourless, and emits a peculiar odour, much more agreeable than that of the common turpentines of the shops.

the trees, described by this author, to their proper places in the Linnean *Species Plantarum*, it is evident, that three or four kinds of turpentine were in use amongst the ancient physicians, which correspond in their properties, with those found in the shops of the moderns.

It has been remarked, that trees with the thickest bark, and which are most exposed to the sun, generally yield the most turpentine. After the outer bark has been taken away, the inner bark, and a thin slip of wood, are cut off, with a very sharp tool, so that there may be a wound in the tree not more than three inches square by an inch deep. The first incision is made near the foot of the tree ; and as the resin flows most abundantly in hot weather, the operations are begun near the end of May, and continued to September. The resinous juice is received by holes dug in the ground at the foot of the tree, and is afterwards taken out with ladles made either of wood or iron ; then poured into pails, in order to be removed to the hollow trunk of a pine sufficiently large to hold three or four barrels.

In France, distinct appellations have been given to the several states of the resinous juice of Pines ; that which condenses on the wounds towards the decline of the sap, being called *Galipot* in Provence, and *Barras* in Guienne ; the fluid resin obtains the name of *Perinne vierge* ; and a thinner kind of the latter, subjected to a sort of filtration, is called *Bijon*, or *Terebinthine fine*. The galipot is used by the chandlers to make flambeaux, though the greatest quantity usually undergoes conversion, by being boiled, in *brai-sec* and *yellow-resin*.

The liquid resin of the Pine, though of inferior quality to that of the Turpentine-tree, the Larch, and the Silver Fir, especially for internal use, is too often substituted for the others by druggists. In most terebinthinate preparations, this species is the subject, and there is no reason, perhaps, why the essential oil, and other parts of it, separately taken, should not be equally good.

ESSENTIAL OIL (*Oleum Terebinthinæ. Spiritus Terebinthinæ. Esprit de Rase. Essential Oil of Turpentine*) is obtained, as directed by the London Pharmacopœia, by distilling five

pounds of the resinous juice with four pails of water, in a copper alembic. If one pound of the oil be re-distilled with four pints of water, the result is called rectified oil of turpentine. (*Oleum Terebinthinæ rectificatum* of the London and Dublin colleges.) The process is not unattended with danger, for unless the luting be very close, some of the vapour is apt to escape; and if the latter should take fire, the vessels will burst. In some dispensaries, this rectified oil is denominated *ætherial*. It does not differ very considerably in specific gravity, smell, taste, or medical qualities, from the common essential oil.

COMMON RESIN (*Resina Flava*) is the residuum of the process for obtaining the essential oil. This process, pushed as far as the nature of the subject will admit of, changes the colour to a deep brown, or black, when the resin acquires the name of *black resin*, or *colophony*, which latter was originally the appellation of a raw, liquid resin, brought from Colophon, in Ionia, which is described by Dioscorides, (Lib. I. c. 77.)* The medicinal properties of these two resins are, of course, extremely alike. They are rarely used internally; but for external purposes they can scarcely be dispensed with, being remarkably adhesive when mixed with other materials. Colophony is of considerable use in the arts. It enters into the composition of several varnishes, and is sometimes substituted for sandarach. Musicians rub the bows and strings of violins with it, to take off greasy particles, and to counteract humidity.

TAR. (*Pix liquida Pineæ*. Πίττα, Πίσσα γύρα, Κωρός, of the Greeks. *Pix liquida* of the Romans, and of most modern pharmacopœias. *Goudron*, of the French.) This well-known substance is obtained from the roots and other parts of old pines, by a sort of *distillatio per descensum*. “*Pix nihil aliud est* (says Pliny†) *quam combustæ resinæ fluxus.*” It differs from the native resinous juice in having acquired an empyreumatic

* See also Galen (*de Comp. Med.* lib. 7,) and Pliny, (lib. 14, c. 20.) Celsus allows the choice, either of the *Resina Colophonia*, or the *Resina Pineæ*, in the composition of his discutient plaster: and Scribonius mentions Colophony as a purgative.

† Lib. 23. cap. i.

quality from the action of fire ; and in containing the saline and mucilaginous parts of the tree, mixed with the extractive, and the oily. The greater part of the tar imported into this country is brought from the Baltic, as the produce of the Scotch fir ; but in America is chiefly obtained from the *Pinus australis*. The process employed in most countries differs little from that which was followed by the ancient Macedonians, and which is circumstantially described by Theophrastus, in the third chapter of his ninth book, when he tells us, that the billets were placed erect beside one another, and that they were afterwards covered with turf to prevent the flame from bursting forth, in which case the tar was lost. The stacks were sometimes, he says, one hundred and eighty cubits in circumference, and sixty, or even one hundred in height. These huge heaps of wood being set on fire, the tar was made to flow from them in channels cut for that purpose. As all the trees of this genus yield the same substance, by the same treatment, it is probable that the ancients did not confine themselves to one species for obtaining it, any more than the moderns, and that some variety was occasioned in the product according to the different management of the fire, and in the cooling. Hence arise the confusion, and the difference of opinion respecting the terms *Cedra*, *Cedrælon*, *Pissæleon*, &c. which, after the most industrious collation of passages from Theophrastus, Dioscorides, Galen, and Pliny, it is scarcely possible at this day to refer to the precise substances which they were intended to designate. For the modern method of procuring tar, as practiced in the Valais, we must refer to Duhamel's *Traite des Arbres*, tom. ii. p. 160.

The substances mentioned above are officinal ; but as the produce of the *P. sylvestris*, we have also :

1st. PITCH. (*Pix Pineæ inspissata*. *Βοσκας*, of the Greeks. *Spissa Pix*, Pliny. *Brai-gras*, of the French.) Pitch is made by melting coarse, hard resin, (or *brai-see*, as it is called in France,) with an equal quantity of tar, in large copper vessels similar to those used for boiling the raw juice. If the tar be too thin, the proportion of the resin is increased ; and, on the other hand, if it be thick, a third part of tar is sufficient.

Should the process of inspissation be carried to its utmost limit, the pitch becomes hard and dry, and is called in the shops *Pix arida*, (the Πισσα ξηρα, and Παλιμπισσα of the Greek writers,) which is less pungent and less bitter than the common tar, and is used only in some external applications, as an adhesive substance, agreeing in its medicinal virtues with common digestives. Pitch is used extensively in ship-building; and blended with oil and suet, is much employed by the sons of Crispin for waxing their thread. With whale oil it forms the grease for carriage wheels, and in several kinds of luting is familiar to mechanics, and handicraftsmen.

2ndly. LAMP BLACK. (*Fuligo Pineae*; *Noir de fumee*, of the French.) To obtain lamp-black, a sort of box is made nicely closed in every part, with the exception of some holes in the top, which are covered with a sort of linen cone. At a little distance from the box a furnace is constructed, with a very small mouth, and the inferior part communicating with the inside of the box by an horizontal chimney. Into this furnace are put the dregs and coarser parts left in the preparation of tar; and in proportion to the consumption of these a supply is kept up, so as to furnish a constant draught of smoke into the box. The smoke goes chiefly into the cone, when it deposits its soot, or lamp-black, which is employed almost exclusively in printing and dyeing.

3rdly. BARK BREAD. We are informed by Linneus, that the Laplanders eat, during a great part of the winter, and sometimes even during the whole year, a preparation of the inner bark of the pine, which they call *Bark-broed*. This substance is made in the following manner, viz. after a selection of the tallest and least ramose trees, (for the dwarf branching ones contain too much resinous juice,) the dry, scaly, external bark is carefully taken off, and the soft, white, fibrous, and succulent matter collected and dried. The time of the year chosen for this process is when the *alburnum* is soft, and spontaneously separates from the wood by very gentle pulling, otherwise too much labour would be required. When the natives are about to convert it to use, it is slowly baked on the coals, and being thus

rendered porous and hard, is ground into powder, which is kneaded with water into cakes and baked in an oven. The Siberian ermine-hunters, when their ferment or yeast, which they carry with them to make their *Quass*, is spoiled by the cold, digest the inner bark of the pine with water over the fire during an hour, mix it with their rye-meal, bury the dough in the snow, and after twelve hours, find the ferment ready prepared on the subsiding fæces.*

PINUS BALSEMEA.

CANADA BALSAM is the produce of this tree. (*Resina liquida balsamea. Balsamum Canadense*, Pharm. L. et E. *Baumier du Canada*; vel, *Sapin Baumier*, Pharm. F.)

It is a transparent, whitish juice, brought to this country from Canada; and differs little in its qualities from the celebrated Balm of Gilead, the product of *Amyris Gileadensis*, so high in esteem among the eastern nations, and so strongly recommended in a variety of complaints. Hitherto, however, it has not been much employed in England, yet it is thought capable of answering all the purposes for which the Copaiba balsam is employed; and would, therefore, deserve a more general trial. It has an agreeable odour, and a strong pungent taste.

PINUS ABIES.

THIS tree yields the *THUS*† of the old London Pharmacopœia. (*Resina concreta abiegna. Poix*, of the French.) It exudes spontaneously from the pores of the tree, and soon concretes into distinct drops, or tears, which differ from Strasburg turpen-

* Pallas. Fl. Ross. p. 2, 3.

† The *Thus* of the ancients does not appear to have been the product of any species of *Pinus*, but, as we are informed by Dioscorides, (lib. i. cap. 70,) pine resin was often substituted for it; and the substance now bearing that name in the shops, is seldom any other than the concrete resin described above. Dioscorides describes a mode of distinguishing the two kinds. “Resin, (of the pine,) says he, when thrown into the fire, dissipates itself in smoke, whereas frankincense burns with a brisk flame, and the odour of the latter serves to detect imposition. “Some writers,” observes Dr. Maton, “are of opinion, that the genuine *Λιβανος*, *Thus*, or Frankincense, is obtained from *Juniperus lycia*, and constitutes the *Olibanum* of our shops, but I cannot find any passages in ancient authors, sufficiently precise to corroborate this conjecture.”

tine, the produce of the silver fir, *Pinus picea*, in being compact, opaque, and of a deeper yellow colour. The common frankincense of the shops, is probably no other than this resin, or, at least, the latter is, in general, mixed with the former, and becomes an ingredient in the *Emplastrum Thuris compositum*, and *Empl. Ladani compositum*, of the London Pharmacopœia.

BURGUNDY PITCH, (*Resina abiegna cocta. Pix Burgundica. Poix-grasse vel Poix de Bourgogne.*) This substance is of a close consistence, but rather soft, of a reddish brown colour, and not unpleasant smell. The shops are supplied with it chiefly from Saxony, where, however, many adulterations take place; and in this country, a preparation of the common turpentine substituted for it. Genuine Burgundy pitch, is prepared from the resinous juice of the Norway spruce, which is yielded by that tree from the month of April to September, from incisions made in the bark. In the operation of cutting, the wood is left untouched, for the juice exudes chiefly from *between* the bark and the wood, and in small quantities from the former alone; but not from the latter. It fixes almost immediately after it is freed from its lodgment, and therefore does not flow to the ground, but remains attached to the tree in large tears, or flakes. This concrete matter is collected once a fortnight, by detaching it with an instrument formed on one side like an axe, and on the other like a gorget. With this instrument, also, the incision is renewed every time that the resin is collected. A vigorous tree, planted in a good soil, will yield in one year thirty or forty pounds of juice; which becomes dry enough to be put into sacks, and is thus conveyed by the peasants to places where the following process is carried on, viz.—The resinous substance is put with a proper quantity of water into large boilers; a moderate fire melts it; it is then strained, under a press, through strong, close cloths, into barrels, to be transported to distant countries. This is the method, according to Duhamel, that is practised in the neighbourhood of Neufchatel; but it differs in other places, as may be seen by consulting Axtius' *Tract. de Arb. Conif.*, p. 79; or Geoffroy's *Mat. Med.*, T. 3, p. 437.

PINUS LARIX.

VENICE TURPENTINE (*Resina liquida Larigna. Largatum*, of the Italians. *Terebintha Veneta*, Pharm. Ed.) A produce of this species of pine, is generally esteemed the best of the juices called Turpentine, after that of *Pistachia Terebinthus*. It is usually thinner than any other sort, of a pale yellowish colour, and of a hot, pungent, bitterish taste. It is said to remain always, or at least a very long time, in a state of liquidity; if it should at length become at all concrete, it is only on the edges, or sides of the vessel in which it may be contained. This property is adverted to by Pliny, *Lib. 16. c. 10*.

Though it bears the name of Venice Turpentine, very little is exported from the Venetian territory; but it is probable that the merchants of that country were the first who substituted it for the genuine turpentine of Cyprus. That which is most commonly met with in the shops, comes from New England; from what tree, we are ignorant. The true liquid resin of the Larch, is obtained chiefly from France and Germany. It is procured by boring holes in the trees in May, which are about an inch in diameter, and have a gentle inclination downwards: to these holes a kind of gutter is adapted, from fifteen to twenty inches in length, which terminates like a peg perforated in the centre. The juice passing along these tubes, falls into troughs, placed at their most depending part. This process is continued to the end of September; and as it is impossible to secure the troughs from leaves, and other extraneous matter, the resin is usually strained through a hair sieve into other vessels, in which it is transported to the places of sale.

Besides Venice Turpentine, the Larch also yields the *Gummi Orenburgense*, of the Russian shops, and, although it is used by no other country, it is described as a good substitute for Gum Arabic. It is very glutinous; rather dry; of a reddish colour, and a sub-resinous taste; but wholly soluble in water. The mode in which this substance is obtained is very remarkable. It sometimes happens that whole forests of Larch, in some parts of the Russian empire, are accidentally consumed by fire. During the

combustion of the medullary part of the trunks, a gum issues forth, which is diligently collected by the natives, for the purpose, not only of rendering their bows glutinous, but also of being eaten as a delicacy. It is also supposed to act as an anti-scorbutic, and an useful astringent for the gums.

MANNA OF THE LARCH (*Manna Larignu. Manne de Briançon.*) About the month of June, when the sap of the Larch is most luxuriant, it produces small white drops, of a sweet, glutinous matter, like Calabrian manna. This manna is collected by the peasants, who go very early in the morning to the forests, before the sun dissipates it, and lop off, with hatchets, the branches that bear it; carrying them afterwards to the shade, where they can collect the grains at their leisure. The Venetians have many different names for the varieties of it; and in Dauphiny it has been very generally employed as a laxative; but it is said to possess not more than half the strength of that which is yielded by the Calabrian ash.

QUALITIES AND CHEMICAL PROPERTIES.—It is, at present, the opinion of chemists, that *resins* stand in the same relation to the *volatile* oils that wax does to the *fixed*. Wax is considered as a fixed oil saturated with oxygen; resins, as volatile oils, saturated with the same principle. The reader can be at no loss to form a notion of what is meant by *resin*, when he is informed that common *rosin* furnishes a very perfect example of a resin, and that it is from this substance that the whole genus derived their name: for *rosin* is frequently denominated resin: which is the substance that remains in the retort after the volatile oil (spirits of turpentine) has passed over. During the operation of distillation, succinic acid also rises. Turpentine may, therefore, be said to consist of *essential oil*, *succinic acid*, and resin, in the simple acceptance of the term.

Terebinthinous exudations, prior to the separation of the essential oil, are termed *resins*; they are solid substances, naturally brittle; have a certain degree of transparency, and a colour most commonly inclining to yellow. Their taste is more or less acrid, and not unlike that of volatile oils; but they have

no smell unless they happen to contain some foreign body. They are all heavier than water. All are *non-conductors* of electricity; and when excited by friction, their electricity is negative. Their specific gravity varies considerably. When exposed to heat they melt; and if the heat be increased, they take fire, and burn with a strong, yellow flame, emitting, at the same time, a vast quantity of smoke. They are insoluble in water, whether cold or hot; but under some circumstances are capable of uniting with a small portion of that fluid. All, with a few exceptions, are soluble in alcohol. Several are so in fluid oils, especially in the drying oils. The greater number are soluble in the volatile oils. Mr. Hatchett has ascertained, contrary to the received opinions, that alkaline leys dissolve them with facility. These alkaline solutions of resins have the properties of soap, and may be employed as detergents. Most of the acids dissolve resins with facility, producing different phenomena, according to circumstances; and the sulphuric and nitre convert them into artificial tannin.

When *volatile oils* are exposed for some time to the action of the atmosphere, they acquire consistency, and assume the properties of resins. During this change, they absorb oxygen from the air. When volatile oil is exposed to the air, it is partly converted into a resin, and partly into a crystallized acid; usually the benzoic, or the camphoric. For a more complete account, we refer to Thompson's System of Chemistry; to which we are much indebted for this detail.

MEDICAL PROPERTIES AND USES.—The writings of Dioscorides, Pliny, and Aretæus, prove that the ancients admitted all the varieties of the turpentine into their materia medica. The first-named author, in his second book, classifies them into moist and dry. Pliny adopts the same arrangement; and both enumerate, very fully, the different species from which each variety is obtained. “*Summæ species duæ, sicca et liquida. Sicca é pinu et picea fit: liquida è terebintho, larice, lentisco, cupresso.*”* This enumeration accords very nearly with that

* Plinii Historia. cap. xxiv. sect. vi.

given by Dioscorides ; as do his remarks on the method of employing them, both internally, and externally. Aretæus gave turpentine internally, in the form of a linctus, composed of nitre, rue, and honey ; for lethargy, apoplexy, melancholia, and pleurisy. He prescribed it also in enemas, in conjunction with cummin and rue, for cephalæa, and volvulus ; externally in phrenitis, and tetanus : and, in the latter disease, it formed the principal ingredient in the cataplasms which were ordered to the injured part, upon the supervention of the tetanic symptoms. Prosper Alpinus enumerates the turpentine amongst the individual remedies of the *Theriaca* of the Egyptians ; and that they greatly employed it in the middle ages, may be inferred from the later, but extravagant praises of Fernelius. “Terebinthina calefacit, mollit, discutit, terget, expurgat : viscerum omnium, maximeque renum, obstructions tollit, et angustos meatus aperit, urinam ciet, putredinem cohibet.” As the chemical remedies and the chemical doctrines of disease became disseminated through Europe, the province of the terebinthinous class of medicines became invaded, their boundaries more confined, and, with many other celebrated galenicals, deprived of their due consideration. The diseases of the urinary organs were left, however, in their almost undisturbed possession ; so that up to the present time, they have always attached to themselves a portion of attention in the alleviation and cure of disease.

Common turpentine. This variety is directed by the London and Edinburgh colleges to be chiefly used in external applications, for which, as we have stated before, it was much used by the ancients. The *Emplastrum Lythargyri compositum*, and *Unguentum Elemi compositum*, both contain it as a principal ingredient, on account of its supposed powers in digesting, cleansing, and incarnating wounds.

Resin (*Resina alba vel flava*) is only employed in the composition of ointments and plasters, for its adhesive, or its stimulating properties.

Tar was formerly considered almost as a universal *panacea*, and there is no end to the praises that have been bestowed upon it. Dr. Berkeley, Bishop of Cloyne, wrote a dissertation on

Tar Water, under the title of “*Siris, or a Chain of Philosophical Reflexions and Enquiries concerning the virtues of Tar Water.*” Mr. Thomas Prior also published a great number of cases and remarks on its virtues : and from their account, and Cullen’s, it appears to strengthen the tone of the stomach, to excite appetite, promote digestion, and remove dyspeptic symptoms.

Tar Vapour has been recommended by Dr. Crichton for phthisis pulmonalis, and there is little* doubt but that some persons were benefited by its use. Mr. Ward, of Maidenhead has also narrated cases of its success in asthma. The London and Edinburgh colleges direct tar to be made into an ointment ; (*Unguentum Picis* ;) the former by means of the admixture of an equal portion of mutton suet ; and the latter, of two-fifths of yellow wax. This ointment has been much employed for the cure of cutaneous affections, particularly those of domestic animals : and although the barbarous practice of the *pitch cup* is now justly exploded, we have seen the application of this salve, of eminent service in porrigo of the scalp.

Burgundy Pitch is employed only externally. It enters into the composition of the *Emplastrum Cumini*, and the *Empl: Picis Burgundicæ compositum*. It forms a warm stimulant application, and sometimes occasions vesications ; though, in general, a redness of the part, with a gentle exudation are the only effects observable. The cases in which the last-mentioned plaster seems to produce most good, are those which may be called *nervous dyspnæa* ; but it is also serviceable in coughs, pains of the muscular parts of the chest, and some affections of the trachea, occasioning loss of voice.

Venice Turpentine is substituted, in medicine, for the true, or Chian turpentine, under those circumstances to which the latter is supposed to be particularly suited. As a diuretic, the Venice turpentine is generally preferred to all the other sorts, and it loosens the belly most, on which account Riverius thinks it more safe than most other irritating diuretics. Cullen observes, that when it is employed as an *enema*, its effects are more certain and durable than those of saline medicines, for remedying obstinate constipations of the bowels. Other prac-

titioners have employed it with advantage in some nephritic cases, exhibiting it in a similar form, by the *rectum*. It forms a part of several plasters and ointments; as, for instance, the *Emplastrum de Belladonna* of the Brunswick pharmacopœia, the *Unguentum Infusi Cantharidum* (Ed;) and the *Unguentum divestigum* of the Russian shops.

Essential oil, or Spirits of Turpentine. Of all the terebinthinous remedies, the essential oil is the most esteemed; and since that erudite physician, Dr. Copland, published his valuable paper on them, (from which we have derived much of the information that we are able to communicate,) many prejudices against its employment have been dissipated, and its utility from day to day more fully confirmed. It is evident from the violet odour that it communicates to the urine, and from other circumstances, that it is a powerful stimulant, capable of being particularly directed to the urinary organs; and from this specific action it is often given for gleet, in doses of from ten to thirteen drops. Cheyne and Pitcairn particularly recommended it for chronic rheumatism, and were followed by Cullen, and Home. The latter gave it in the form of linctus, consisting of two drachms of the oil, and one ounce of honey; and of this a teaspoonful was taken twice, or thrice, in twenty-four hours. This was the same formula as recommended by Cheyne; and, from the cases related by Home, it appears to have generally cured the disease. When this remedy is employed for chronic rheumatism, it may be taken either in the small or medium doses, combined with any of the preparatives of cinchona, or senega, &c. triturated with mucilage into the form of a draught; to which *tinct. capsici*, or *tinct. cardam.*, or *spirit armorac. comp.* with a drop of some essential oil ought to be added. Dr. Copland prefers the capsicum annuum to any other, both as an adjuvant, and corrigent to other remedies; having ascertained, that if given in considerable quantities, in the form of pills, it will remove this disease as soon as any other remedy.

For *sciatica* and *lumbago* the following linctus is efficaciously administered; but the operation of the turpentine must be closely watched lest they affect the urinary organs.

R. Mellis optimi ℥ii.

Olei terebinthinæ.

Tinct. Guiaci Ammon. ā ā ℥ij.

Olei Caryophil.

—— Limonis ā ā gtt. iii.—Misce ut fiat linctus :
cochleare unum minimum bis terve de die sumendum.

For *passive hæmorrhages*, and *petechiæ*, we have seen it most advantageously given; and in *atonic epistaxis* of children, and in *hæmoptysis*, accompanied with debility, it has been resorted to with advantage. For *hæmorrhoids*, seated high up in the rectum, more especially after repeated attacks have debilitated the patient, the spirits of turpentine is of great service as well as in *chronic dysentery*, and *chronic diarrhæa*. For *epilepsy* it has often been given with decided advantage; and we could narrate several instances of its remarkable success in this disease, of very long standing; which appeared to us to be kept up, more through habit, than from the existence of organic lesion. Several other spasmodic diseases, as *chorea* and *tetanus*, are recorded to have been cured by its internal use, and, in the hands of Dr. Copland, we have *seen* its beneficial effects produced in a variety of maladies; which he has fully adverted to in the 46th Vol. of the Medical and Physical Journal.

Large doses, from one, to two ounces, are sometimes given in the last stages of puerperal fever; and numerous cases are recorded of its producing copious evacuations, whereby tension of the belly is removed, and the disease arrested. After purging and leeching, employed in the same disease, we have known drachm doses to be most advantageously and repeatedly employed, and, by applying it hot to the abdomen in the earliest stages of that fatal malady, it is generally arrested in its progress, as numerous cases that have occurred lately in the Queen's Lying-in Hospital, under the superintendence of Dr. Copland, testify.

It has also been introduced as an anthelmintic of great power, and was first recommended by Dr. Fenwick, in Vol. ii. of the Medico-chirurgical Transactions. By giving two ounces at a

time, and repeating it in ounce doses, if necessary, purging is generally produced ; and the worm is usually evacuated lifeless. Its operation on the bowels, says Dr. Murray, as a cathartic in larger quantity, seems to prevent its absorption, and therefore obviates its action on the urinary organs ; and it has been stated in conformity to this, that this action, giving rise to strangury, is more likely to happen from small, than large doses. Analogy leads to the employment of the same remedy, for the expulsion of other worms, and in some cases *lumbrici* have been expelled. It has also been employed under the form of enema, half an ounce being diffused in mucilage, or in water, by the medium of the yolk of an egg. The nauseating effect on the stomach is thus avoided, but this mode is frequently productive of pain.

Externally, it is also employed as a rubefacient ; and, what is very curious, if applied to the skin of a horse, dog, cat, and some other animals, it acts like scalding water, blisters the skin, and produces intense pain.

Its most important use, however, as a topical application is, as a remedy for extensive burns and scalds, when recently inflicted. Dr. Kentish, of Newcastle, appears to have been the first to introduce the oil of turpentine ; and has published several cases, in which it was employed with the most beneficial effect. In applying this remedy, the great object is to avoid the *cooling process of evaporation*, and we are directed to proceed in the following manner : the injured parts are to be bathed two or three times over with the oil, or with spirits of wine, which answers the same purpose, heated by standing in hot water. After this a liniment, composed of the unguentum resinæ, softened with oil of turpentine, (*Linimentum terebinthinæ*), is to be spread on soft cloth, and applied. This liniment is to be renewed only once in twenty-four hours, and, at the second dressing, the parts are to be washed with proof spirits. When the secretion of pus takes place, milder applications must be had recourse to, till the cure is effected. During the use of the turpentine it is of the utmost importance that the injured surface should be left uncovered as little as possible ; it is therefore recommended to let the plasters be quite ready before the old ones are removed,

and then only to take off one piece at a time. When the inflammatory action has somewhat abated, the exciting means should also be diminished, and warm proof spirits, or laudanum, may be substituted for the oil, and the unguentum resinæ flavæ is to be mixed with oleum camphoratum instead of turpentine. If this should be found too irritating, Dr. Kentish recommends ceratum plumbi acetatis, or the common calamine cerate. When this mode of treatment is adopted, æther, or alcohol, and other stimulants, with opium, are to be immediately given in proportion to the degree of injury, and repeated as circumstances may require. In slight burns in which the *action of the part only is increased*, he has not found any thing better for the first application than the heated oleum terebinthinæ and ceratum resinæ thinned with the same.



Croton Tiglium L.

IV

CROTON TIGLIUM.

Purging Croton.

Class XXI. MONÆCIA. Order VIII. MONADELPHIA.

*Nat. Ord. TRICOCCÆ, Lin. EUPHORBIÆ, Juss. TITHY-
MALOIDES, Vent.*

GEN. CHAR. Male. *Calyx* cylindrical, 5-toothed.
Corolla of five petals. *Stamens* ten to fifteen.

Female. *Calyx* polyphyllus. *Corolla* o.
Styles three, bifid. *Capsule* trilocular. *Seed* one.

SPEC. CHAR. *Leaves* ovate-acuminate, serrate, gla-
brous. *Stem* arboreus.

Syn.—*Pinus indica*, *Bauh. Pin.* 492. n. 11.

Ricinoides indica, *Flor. Zeyl.* 343.

Ricinus indicus arborescens, *Chom.* i. 61.

Croton Tiglium, *Lin. Sp. Pl.* 1426; *Willd.* iv. 531; *Sp.* 36.

κροτων, *Diosc.*; *Lignum Mollucense Dalech.* ii. 1864; *Granum Mollucarum*,
Rumph. Amboyn. iv. 98. t. 42; *Cade-avenac*, *Rheed. Malab.* ii. 61. t. 33;
Raii. Hist. Plant. 167; *Grana Tiglii*, *Lin.* 247; *Vog.* 172; *Grana Tilli*,
Berg. 768; *Murr.* iv. 149; *Tiglium*, *Lew.* ii. 272; *Nuclæ catharticae*,
Geofr. ii. 428.

ORIENTAL APPELLATIONS.—*Nervalum cottay*, *Tam.*; *Jumal gota*, *Hind.* and *Duk.*;
Dund. Per.; *Batoo*, *Arab.*; *Naypalam Vitiloo*, *Tel.*; *Iayapala*, *Can.*; *Nepala*
Sans.; *Bori*, *Malay*; *Nepālam*, *Cyng.*; also *Duntibeega*, *Sans.*; *Cheraken*,
Jav.; *Croton*, *Fr.*—(*Ainslie.*)

THIS plant is a native of Java, and Ceylon, and is found in Malabar, China, Cochin-China, and the Molucca islands. Of nearly ninety species of the genus *Croton*, this is the only one that is purgative.

It is a low tree, seldom exceeding twelve or fifteen feet in height, with spreading branches, and covered with a soft blackish bark. The leaves are alternate, ovate-acuminate, serrated, and smooth, having two glands seated at the base, and supported on longish petioles. The flowers are in erect, simple, terminating racemes. In the male flowers (*a*) the calyx is cylindrical, and five-toothed; the corolla consists of five straw-coloured petals, and there are from ten, to fifteen stamina. (*b*) In the female

flowers (*c*) the calyx is many-cleft, and reflected under the ger-
men; there is no corolla, but there are three bifid styles. The
capsule(*d*) is trilocular, and smooth, each cell containing one seed.
The seeds are about the size of a hazel-nut, somewhat concave on
one side, and convex on the other, of a brownish yellow colour.
Our figure was taken from a drawing in the Medico-Botanical
Society of London.

CHEMICAL PROPERTIES.—The *Croton Tiglium* has excited
considerable attention during the last three, or four years; for
although the active properties of its seeds have been long known
under the names *grana molucca*, *nuculæ catharticæ*, *tiglii grana*,
and *grana tiglii*, the violent effects they frequently produced,
prevented them from being generally used. It remained for
practitioners of the present day to ascertain their claims to notice;
and we are indebted to Dr. Ainslie, Dr. Nimmo, Mr. Wilson,*
Mr. Iliff, and several others, for their scientific and chemical in-
vestigations respecting them.

“Mr. Frost found that the expressed oil of the seeds of this plant
was entirely soluble in ether; the oil of turpentine; and particularly
so in alcohol. One hundred grains of the seed consisted of

32 shell
68 kernel
100

“One hundred grains of the seed were digested in three drachms
of sulphuric ether, sp. grav. 71, and afforded 25 grains of fixed oil.

“Thirty-two grains of the oil were put into a Florence cask, con-
taining some alcohol previously digested on olive oil, to prevent the
spirit from dissolving any of the oil of the croton tiglium seed. The
mixture was now agitated, and then passed through a filter containing
carbonate of ammonia: the filtered solution was then evaporated
without heat, and yielded—

“Active matter (soluble in alcohol and ether) com- bined with a very small portion of fixed oil . . .	8.5 grs.
“Inert fixed oil	23.5

32 grs.

According to the experiments of Dr. Nimmo, one hundred
grains of the seeds yield 45 grains of active matter; but Mr.
Frost has not been able to discover so great a quantity in any
sample he has met with: 32 grains per cent. being the largest
proportion. Dr. Paris has repeated some of Dr. Nimmo’s ex-
periments, and discovered an active principle analogous to *elatin*;

* See a valuable article “On the History of the *Croton Tiglium* and its employ-
ment in Native Medicine,” by H. H. Wilson, Esq. in the 1st. vol. of the *Transactions*
of the Medical, and Physical Society of Calcutta, p. 249.

to which he has appropriated the name *tiglin*; that does not appear to possess any of the characters of a salifiable basis.

To obtain the oil, Dr. Nimmo recommends the following plan:

“After digesting the bruised seeds a sufficient time, the whole should be thrown in a filter, closely covered during the process of filtration, and the residuum afterwards washed with a little æther. By this process about two drachms of the oil may be obtained from 300 grains of the seeds. Of the oil thus obtained, an alcoholic solution may be prepared, in the proportion of eight drops of the oil to an ounce of alcohol, as one of the best media for exhibiting it; and as it allows the dose to be readily proportioned, according to the circumstances of the case.”

Dr. Nimmo's prescription.

R Solut. Alcohol. Crotonis Tiglii ℥ss
Syrup. Simplicis.
Mucil. G. Acaciæ āā ℥ij
Aquæ Distillatæ ℥ss

Fiat haustus.

After swallowing a little milk, take the draught quickly, and wash it down with the same diluent.

ADULTERATIONS.—The following is Dr. Nimmo's method, to detect adulterations of the oil:—

“Let a very light phial be counterpoised in an accurate balance; pour into it 50 grains of the suspected oil, add alcohol, (which has been previously digested upon olive oil,*) agitate them well, pour off the solution, and add more alcohol as before, until the dissolved portion is diffused in such a proportion of alcohol, that each half drachm measure shall contain equal to one dose of the oil of *Tiglim*, for an adult. By afterwards placing the phial near a fire, to evaporate what remains of the alcohol in the bottle, *if the residuum be to that which has been abstracted by the alcohol as 55 to 45, the oil is genuine.* If olive, or any other oil, little soluble in alcohol, has been employed as the adulterating agent, it is evident that the residuum will be in larger proportion; but should *castor oil* have been employed for that purpose, the proportion of the residuum will be smaller even than in the genuine medicine.”

MEDICAL PROPERTIES.—Every part of the plant is endowed with medical virtues, and the pulverized root, acting as a drastic purgative, is considered to be a specific for dropsy, at Amboyna, and Batavia: while the wood (*lignum pavanæ*) administered in small doses, exerts diuretic; gentle emetic; and powerful diaphoretic effects. By the Japanese, the leaves, dried and powdered, are externally applied to the bites of serpents. The subjoined form for the preparation of the seeds, as adopted

* The object of this preliminary step is to saturate the alcohol with a fixed oil, that it may not dissolve any portion of that in the *Tiglim*, and thus confuse the results. The quantity of fixed oil, which alcohol is capable of dissolving is extremely small, and will not, in the least degree, injure the alcoholic solution for subsequent medicinal use.

by the native physicians of India, was given by a learned Persee Vydia, of Surat, to Dr. White.

“ After having removed the shells from the seeds, tie the kernels in a small piece of cloth like a bag ; then put this into as much cow-dung water, as will cover the bag, and let it boil ; secondly, when boiled, split the kernels in two, and take a small leaf (filament) from them, which is said to be poisonous ; and thirdly, pound the whole into a mass, to which add two parts *katha* (catechú,) that is, to one drachm of croton, add two of *katha*, and divide into pills of two grains each. The addition of the *katha* is said to correct its acrimony altogether, and to prevent any griping from ensuing.”*

The oil, met with in commerce, is of very unequal powers ; a circumstance that accounts for the different versions of its effects ; and renders the experiments already detailed, doubly valuable. One drop of it has frequently produced hyper-catharsis, while *ten* of other samples, have been given without effect ; being often adulterated with an oil obtained from the seeds of the *Jatropa Curcas*, and *J. multifida*. The genuine oil is not to be trifled with ;† for it is said by Bergius to produce purging if rubbed on the navel : but administered in small doses of one, or two minims to adults, it proves a valuable agent in obstinate constipations of the bowels, when unattended by inflammation : and in apoplexy, convulsions, mania, and other diseases, “ which require, along with the complete evacuation of the primæ viæ, the lessening of the circulating mass.” It is best administered in pills, conjoined with soap, and an aromatic ; or in the form of mixture, blended with mucilage and syrup. For example :—

℞ Olei Tiglii gtt vj
Glycyrrh pulv. ʒj
Saponis duri ʒiſs
Olei Caryophyl. gtt vj.
Syrup. simpl. quod satis sit.
Misce, fiant pilulæ duodecim :—dosis, duæ.
℞ Olei Tiglii gtt vj-viij.
Mucilaginis Acaciæ.
Syrup. Rhœados. āā ʒiſs.
Lactis Amygdalæ ʒiv Misce.
Dosis, fluiduncia sextis horis.

The *treatment* in cases of poisoning, from an improper administration of the oil, should they occur, consists in large draughts of mucilaginous drinks, together with repeated doses of opium, and the general antiphlogistic practice.

* Ainslie's *Materia Indica*, fol. 103.

† Lewis remarks, “ Geoffrey limits the dose to one drop, which is probably an error of the press, for one drachm.”



Croton Eleuteria.

G. Reid. del.

C. Eleuteria

Weddell.

Cascarilla

CROTON ELUTERIA.

Elutheria, or Cascarilla-Bark Tree.

SPEC. CHAR. *Leaves* ovate-acuminate, entire, smooth, silvery with orbicular scales beneath. *Racemes* axillary or terminal. *Stem* arborescent.

Syn.—Clutia Eluteria, foliis cordato-lanceolatis. *Lin. Sp. Pl.* 1476; *Amœn. Acad.* v. 5. p. 411.

Croton fruticosum erectum subvillosum, foliis cordatis acuminatis, spicis terminalibus. *Brown Jam.* 347.

Mali folio arbor artemisiæ odore et flore. *Sloan. Hist.* v. 2. t. 174. f. 2.

Croton Eluteria. *Willd. Sp., Pl.* v. 4. p. 545; *Swartz Prodr.* 100; *Fl. Ind. Occid.* 2. p. 1183; *Stokes Bot. Mat. Med.* v. 4. p. 444; *Woodv. Suppl.* p. 2. t. 211.

ALTHOUGH the London College has designated the plant which yields the Cascarilla bark, by the name of Croton *Cascarilla*, there is reason to believe that the tree or shrub to which this name was given by Linneus, does not furnish the bark that we use in medicine, but that it is obtained from the Clutia *Eleuteria* of that author. It is the Croton *Eluteria* of Swartz and Willdenow; and Europe is supplied with the bark exclusively from the Bahama islands, where the plant grows in great abundance. It is also said to be a native of Jamaica, and grows in St. Domingo, in dry, stony places, about the Port de la Paix, from whence it is called *Sauge du Port de Paix*. “Among other circumstances,” says Dr. Woodville, to whose work we are indebted for the accompanying figure and description, “which tended to involve the parental source of Cascarilla long in uncertainty, was the assertion of some authors, that it was a native of the Spanish Main, and was thence imported into Europe: thus founding a presumption that the Cascarilla and Eleuteria barks were different, and the latter only was the pro-

duce of the Bahama islands.* But this assertion we have discovered to be contrary to facts; for upon inquiry we do not find that this drug was ever imported from Spanish America; but that the Bahamas have constantly supplied the European markets with Cascarilla bark, a parcel of which was sent here from one of those islands, along with specimens of the tree producing it; of which the figure here given is a faithful representation, as may be seen by comparing it with the original in the herbarium of Sir Joseph Banks. But it will be necessary to observe here, that Dr. Wright, in his account of the medicinal plants growing in Jamaica, gives the name *Croton Eleutheria* to a tree, the bark of which, he says, is the same as the Cascarilla or Eleutheria of the shops.”†

The Elutheria is a small tree, seldom exceeding twenty feet in height, and sending off numerous branches especially towards the top; the bark which covers the branches is brown and smooth; but that of the trunk is externally more white and rough. The branches are brittle, and, when broken, ooze out a thick balsamic juice. The leaves are entire, ovate-lanceolate, somewhat cordate, and elongated towards the apex, which is blunt, and placed alternately on short petioles. The upper surface is studded with small orbicular scales; the under is whitish, shining, and silvery. The flowers are in axillary and terminal spikes, and are composed of a calyx divided into five ovate leaflets, and an equal number of small whitish, oblong, obtuse petals. The male flower has ten awl-shaped filaments, bearing erect, compressed anthers. The female produces a roundish germen, supporting three bifid spreading styles, with obtuse stigmas. The capsule is oblong, marked with six furrows, and divided into three cells, each containing a solitary, oval, shining seed.

QUALITIES AND CHEMICAL PROPERTIES.—This bark is brought to us in chests and bales. It is either in curled pieces, or in short quills of a greyish colour on the outside, and a

* See Boulduc, *Hist. de l'Acad. des Scien. an. 1719. p. 14.* Spielman, *MM. p. 249.*

† See *Medical Journal*, v. 8. for 1787, p. 249.

brownish-red on the inner. It is covered with a great variety of lichens.* It has an aromatic agreeable odour, and when burnt emits a smell resembling that of musk. To the taste it is warm, bitter, and aromatic; and breaks with a resinous fracture. The powder is of a greyish brown colour. It yields its virtues partially to alcohol and to water; completely to proof spirit. According to an analysis of Trommsdorf, 4696 parts of it yielded,

Mucilage and bitter principle	. 864
Resin	. 688
Volatile oil	. 72
Water	. 48
Woody fibre	. 3024
	<hr/> 4696

Ann. de Chim. xxij. 2I9.

MEDICAL PROPERTIES AND USES.—Cascarilla or Elutheria bark appears to have been first introduced into practice by J. And. Stisser, doctor in medicine, and professor in the university of Juliers, who, in his *Specimen Actor. Laboratorii Chymici*, published at Helmstadt in 1693, relates that he had some of it given him by a person of distinction, at that time just returned from England, who told him that it was then the custom in that country to mix it with tobacco, in order to render it more agreeable for smoking. It was afterwards sold in the public markets at Brunswick for Peruvian bark, and in his hands it proved carminative and diuretic, and was useful in arthritic and

* The subjoined enumeration is to be found in a work by M. Fée, entitled “*Essai des Cryptogames des écorces exotiques officinales.*”

Opegrapha abbreviata.	Fissurina lactea.	Pyrenula leucostoma.
———— Comma.	Arthonia divergens.	———— leucostoma.
———— calcea.	———— polymorpha.	———— endoleuca.
———— heterocarpa.	———— dilatata.	Porina americana.
———— myriocarpa.	Sarcographa tigrina.	Verrucaria epidermis.
Graphis exilis.	———— Cascarillæ.	———— planorbis.
———— tortuosa.	Chiodecton paradoxum.	———— caduca.
———— pachnodes.	Trypethelium Sprengelii.	———— serialis.
———— Cascarillæ.	———— crassum.	———— Gandichalda.
———— lineola.	———— lageniferum.	Thelotrema lepadium.
———— serpentina.	———— Scoria.	Coniocarpon myriadeum.
———— caribæa.	———— porosum.	———— Cascarillæ.
———— Afzelii.	Parmentaria astroidea.	Lecidea ? arthonoides.
———— endocarpa.	Pyrenula nitida.	Parmelia perlata.
Glyphis favulosa.	———— pinguis.	

scorbutic cases. From an historical account of an epidemic fever of the intermittent form, accompanied with *petechiæ*, which raged at Nurenburch, in the year 1694, the usual remedies proving ineffectual, J. Ludovicus Apinus, a physician of Herspruch, was induced to add to them the powder of cascarilla, which not only proved successful, but also relieved the dysentery which succeeded the fever. He states further, that copious perspirations were produced, without reducing the patient's strength; the bowels were also kept open, and those who did not sweat had generally three or four alvine evacuations daily. Where menstrual or hæmorrhoidal fluxes had been suppressed at the beginning of the disorder, they generally reappeared on the use of this medicine.* In 1719 an epidemic dysentery raged in France,† which appears to have yielded more readily to cascarilla than to any other remedy; and it was observed to support the strength and promote appetite, when lowness of spirits and debility of stomach followed the complaint.

It was soon after much used all over Germany, as a substitute for Cinchona bark; and although its virtues were too highly extolled in that country, it is still employed with considerable success. In England its real merits are pretty well appreciated, being considered a useful, warm, aromatic bitter, and as such employed as an efficacious stomachic; for flatulent cholic, chronic dysentery, and the diarrhœa of acute fevers: and although we do not depend on it alone in ague, we often combine it with cinchona bark, by which the stomach is enabled to bear larger quantities of the latter than it otherwise would. By the late Dr. Underwood it was highly esteemed as a remedy for the gangrenous thrush which sometimes affects children.

DOSE.—From ten to thirty grains of the powder three or four times a day.

OFF. PREP.—Infusum Cascarillæ, L.
Tinctura Cascarillæ, L.D.
Extractum Cascarillæ, D.

* *Historica relatio febris epidemicæ*, 1697.

† *Hist. de l' Acad. Royale des Sciences*, 1719.





Ricinus communis

L

RICINUS COMMUNIS.

Common Palma-Christi, or Castor-Oil Plant.

Class XXI. MONŒCIA.—Order VIII. MONADELPHIA.

Nat. Ord. TRICOCCEÆ, Lin. EUPHORBIÆ, Juss.

GEN. CHAR. Male. *Calyx* 5-parted. *Corolla* 0. *Stamens* numerous.

Female. *Calyx* 3-parted. *Corolla* 0. *Styles* three, bifid. *Capsule* 3-celled. *Seed* one.

* *With palmated leaves.*

SPEC. CHAR. *Leaves* peltate; lobes lanceolate, serrated. *Stem* herbaceous, pruinose. *Stigmas* three, cloven at the tip.

Syn.—*Ricinus*, Ger. Em. 496.

Ricinus vulgaris, Bauh. Pin. 432; Hist. 3. 642.

Ricinus sive *Cataputia major vulgator*, Park, 182; Raii Hist. 166.

Avancæ, f. *Citavanacu*, Rheede Hort. Malab. 2. 57. t. 32.

Ricinus communis, Lin. Sp. Pl. 1430; Willd. v. 4. 564; Woodv. 171; t. 61.

FOREIGN.—*Le noix et l'Huile du Ricin*, Fr.; *Semi e l'olio di Ricino*, It.; *Palmoel, Ricin soel*, Sp.; *Gemeiner waudebaum*; *Rizinusöhl*, Ger.; *Eranda*, Sans.; *Areud*, Hind.; *Khirwa*, Arab.

THE Castor-oil plant, from the seeds of which the oil is obtained, grows spontaneously in many tropical districts. It is a tall annual plant, and is found native in almost every part of the East and West Indies, South America, and China. In Africa, this plant, which seldom rises more than four or five feet high in England, attains the size of a considerable tree. Clusius observed it in Spain, with a trunk as large as a man's body, and fifteen or twenty feet high. Ray asserts, that in Sicily it is as large as the common

elder-tree, woody, and perennial. Willdenow, however, expressly says, “*Planta semper annua, nunquam fruticosa vel arborea, nec in calidissimis terræ plagis lignescit.*”

The root is thick, whitish, and furnished with many slender fibres. The stem, as we have already observed, varies in height; it is round, thick, jointed, furrowed, smooth, of a purplish red colour towards the top, and glaucous at the lower part. The leaves are on long tapering purplish footstalks, large, subpeltate, and deeply divided into seven acute, serrated, lanceolate lobes, of a blueish green colour. The flowers are in long, green, glaucous spikes of a blueish green colour, springing from the divisions of the branches, and appear in August and September; the males occupy the lower part of the spike, the females the upper. The *male* flower is destitute of a corolla, and consists of a calyx divided into five oval, pointed, purplish segments, inclosing several long stamens united at the base; the *female* flower is composed of a calyx cut into three narrow segments of a reddish colour; the styles are three, slender, and forked at the apex. The capsule is a trilocular nut, covered with rough spines, which bursts elastically to expel the seeds; the seeds are usually three, of an oblong flat figure, and greyish colour, with brownish red streaks. Fig. (a) represents an anther; (b) a *female* flower, with the prickles removed, showing the calyx, and the insertion of the stamens into the germen; (c) a prickle, (d) the capsule, (e) the back view of a seed, (d) the side view of a seed.

The scientific name *Ricinus*, is said to have been bestowed on the present genus, from the fancied resemblance of its seeds to the small apterous insect called a *tick*, *ricinus*; and this, according to Ainsworth, is compounded of *re* and *canis*, because the tick or tyke, is particularly troublesome to dogs. It is generally regarded as the *Kiki* or *Κροτων* of Dioscorides, who observes, that the seeds are powerfully cathartic. It is likewise mentioned by Ætius, Paulus Ægineta, Pliny, and other ancient authors; hence this species of *Ricinus* appears to have been known at a very early period; and we are informed by Turner in his Herbal, that it was cultivated in England in 1562.

Dierbach * informs us, that the plant was known to Hippocrates under the name *Κροτον*; and Dr. Ainslie says, the castor oil plant grows in great abundance in almost every part of India. It is one of but few examples of an expressed oil possessing medicinal activity; and it is only within a very few years that it has been used in this country. The London College order the oil to be obtained by expression, a method, which according to Mr. Long in his History of Jamaica, is employed there, when it is intended for medical use. The expressed oil is, however, more acrimonious, and less pure than that which is imported from the West Indies, which is obtained in the following manner:—"The seeds being freed from the husks, which are gathered upon their turning brown, and when beginning to burst open, are first bruised in a mortar, afterwards tied up in a linen bag, and then thrown into a large pot, with a sufficient quantity of water, and boiled till the oil is risen to the surface, when it is carefully skimmed off, strained, and kept for use."

QUALITIES AND CHEMICAL PROPERTIES.—Castor oil is of a pale yellow colour, is transparent, viscid, and has little taste or smell. It leaves, however, a slight burning in the throat, after it has been swallowed. That obtained by boiling, becomes rancid much sooner than that procured by expression. It is often adulterated, says Dr. Thompson, with olive oil, linseed oil, and poppy oil, which may be readily detected by adding an equal quantity of *alcohol*, sp. gr. 820 to any given quantity of the suspected oil; if it be pure, a uniform solution will take place, which will not happen if it be adulterated: and the same will be the case, if a weaker spirit be employed, by the addition of camphor. Excepting that it is soluble in alcohol, it has all the characters of other expressed oils. Boiled in nitric acid, it is converted into a sort of wax, which melts too readily to be used for making candles.

POISONOUS EFFECTS.—Three drachms of the seeds of *Palma Christi*, deprived of their ligneous envelope, were introduced into the stomach of a dog of middle size; and the *æso-phagus* was

* *Materia Medica* of Hippocrates Ch. v.

tied. The next day he shewed no remarkable symptoms. The day following, at eight o'clock in the morning, he experienced very severe vertigoes; it was impossible for him to walk without falling; he did not moan. At noon, he laid on his side, in great insensibility, his inspirations were few and deep; the pulsations of the heart natural. He died at two o'clock.

DISSECTION. The mucous membrane of the stomach was not red, but exhibited some small ulcers, the centres of which were black; the rectum which was extremely red, was inflamed in its interior; the lungs though crepitating, contained a small quantity of venous blood."—*Orfila*.

Bergius relates that a robust man chewed a seed, which produced a stinging sensation in the fauces. He passed the night quietly; but the next morning had copious vomitings, and during the whole day he made alternate efforts to vomit, and to go to stool without passing much. From these facts, and other experiments, *Orfila* infers that the seeds produce a local irritation, and act upon the nervous system after being absorbed.

MEDICAL PROPERTIES AND USES.—As a laxative, castor-oil acts so mildly and speedily, that it is often resorted to in cholic, obstinate constipations, hæmorrhoids, and diseases where irritation by other purgatives would be injurious. Pregnant women advantageously have recourse to it; and in this country, as well as in India, where it is prescribed by native physicians, it is a useful evacuant for children. Unlike all other purgative medicines, its doses may be often lessened, when an individual is in the habit of taking it. The bark of the root is a powerful purgative; and in conjunction with chillies and tobacco leaves, is an excellent remedy for gripes in horses; in the West Indies, it is said frequently to act as a diuretic, and the leaves are there used as applications to blisters. Many of the planters burn the oil in their house-lamps, and it is a valuable ingredient in injections.

DOSE. From half an ounce to an ounce and a half, which may be taken floating on peppermint water, to which can be added, a little tincture of senna, if necessary. Sometimes it is formed into an emulsion, by means of mucilage or the yolk of an egg. To prevent nausea or griping from it, a little rum is often employed in the West Indies.



Momordica Elaterium.

MOMORDICA ELATERIUM.

*Wild, or Squirting Cucumber.**Class* XXI. MONŒCIA.—*Ord.* VIII. MONADELPHIA.*Nat. Ord.* CUCURBITACEÆ, *Lin. Juss.**GEN. CHAR.* Male. *Calyx* 5-cleft. *Corolla* 5-parted.
Filaments five.Female. *Calyx* 5-cleft. *Corolla* 5-parted. *Style*
trifid. *Gourd* opening elastically.*SPEC. CHAR.* *Leaves* heart-shaped, sinuated, rough.
Tendrils none. *Fruit* elliptical, hispid, elastic at
the base.*Syn.*—*Cucumis sylvestris*, *Camer. Epit.* 946.*Cucumis sylvestris*, *asininus dictus*, *Ger. Em.* 912; *Bauh. Pin.* 314.*Cucumis agrestis*, *Blackw. t.* 108.*Momordica Elaterium*, *Lin. Sp. Pl.* 1434; *Willd.* iv. 601; *Woodv.* 121.
t. 43; *Stokes Bot. Mat. Med.* iv. 466.*ENGLISH.*—*Elastic Momordia*; *Wild, Squirting, or Asses Cucumber*; *Wild Balsam Apple.**FOREIGN.*—*Concombre sauvage, ou d'âne*, *Fr.*; *Concomero salvatico*, *Ital.*; *Cohombrillo*, *Span.*; *Esselsgurhen*, *Ger.*

WILD CUCUMBER is a hardy annual, growing spontaneously on waste grounds, in the south of Europe; flowering in June and July. It appears to have been introduced into this country at an early period, and is mentioned by Gerarde in 1596. With us, it is seldom cultivated except for curiosity, and does not survive the severity of a northern winter. A few acres, however, are raised annually at Mitcham, in Surry, and some other places, for the sake of the fruit, which yields the well known *elaterium* of the shops.

From the root, which is large and fleshy, somewhat resembling that of briony, issue several thick, round, rough, and trailing stems, divided into many branches, extending every way three or four feet, and destitute of tendrils. The leaves are irregularly heart-shaped, slightly sinuated, rough, hairy, of a greyish green colour above, paler underneath, and stand upon long footstalks. The flowers are axillary, much smaller than those of the common cucumber, of a straw-yellow colour, and are both male and female on the same plant: the male flowers stand on short peduncles, but the female sit on the germen; the corolla is divided into five acute segments, reticulated with green veins, and woolly; the filaments are short, tapering, inserted into the base of the corolla, and supporting recurved, double-headed, orange-coloured anthers; the style is short, cylindrical, three-cleft, and terminated by an oblong stigma. The fruit is watery, of a coriaceous texture, pendulous, oblong, of a greyish colour, and closely set with short bristles. When ripe, it bursts on being touched, and throws out, with great violence, the juice and seeds, through the hole at the insertion of the footstalk.—Fig. (a) represents the stamens; (b) the pistil and germen.

The term *elaterium* was used by Hippocrates to denote internal applications of a detergent or digestive nature, but more especially purgatives of a violent or drastic quality, from the word *Ελαννω*, *agitomoveo*, *stimulo*, but by succeeding authors it was exclusively applied to the active matter which subsides from the juice of the wild cucumber, either on account of its purgative properties, or because its capsule when ripe, suddenly bursts with violence, and emits its contents to a considerable distance. Hence, also, its name “Squirting Cucumber.”

QUALITIES AND CHEMICAL PROPERTIES.—According to Lewis, all the parts of this plant are purgative; an opinion, which he appears to have borrowed from Geoffroy, who says, “*radicum vis cathartica major est quam foliorum; minor vero quam fructuum.*” Lewis observes further, that in Holland, an extract from the root in wine, is exhibited for the elaterium, and found equally efficacious. M. M. Coste and Willemet, also recommend the root to be given in doses from fifteen to thirty grains; but the

conflicting accounts respecting the effects of the substance improperly termed "*extractum elaterii*, (for it is not an extract, either in the chemical or pharmaceutical acceptation of the term, nor an inspissated juice, nor is it a fecula)," and the uncertainty with which different samples are administered, induced Dr. Clutterbuck to institute a series of experiments, from which it appears,

"That the most active principle belonging to this plant, is neither lodged in the *roots, leaves, flowers, nor stalks*, in any considerable quantity; nor is it to be found in the *body* of the fruit itself, or in the *seeds* contained within it; *it was only in the juice around the seeds, therefore, that it could be looked for; and here it will be found, as is evident from the following trials.*

"This juice, as it first issues, without pressure, appears perfectly limpid and colourless. After it has stood for a short time, it becomes turbid; and after some hours it slowly deposits a sediment, which, being collected and gently dried, without much exposure to light, is of a yellowish white colour, slightly tinged with *green*. When dried, it is very light and pulverulent. This is the real *elaterium*, and it is extremely active as a medicine; an *eighth* part of a grain seldom failing to purge violently, and often with vomiting previously. The quantity contained in the cucumber is exceedingly small. From forty cucumbers I obtained only six grains; so that a single cucumber contains about an ordinary dose. Half a bushel, charged at half a guinea in the market, furnished less than two drams of elaterium; hence we cannot wonder at the high price it bears in the shops. This, however, is unnecessarily enhanced by the mode of preparation, and its not being known distinctly in what part the active principle is lodged.

"The juice, after the elaterium had subsided, was evaporated to an extract. Two grains of this were given in *six* cases. In *two* of them it produced several stools; *one* was vomited, and was purged on the following day; *one* was vomited in half an hour without purging; and in *two* it appeared to produce no effect.

"I gave five grains of a similar preparation, obtained from Apothecaries' Hall, in *fourteen* instances. In *seven* of them it produced no effect; in *three* it appeared to operate gently by stool. Of the others there was no report.

"It appears from hence, that the juice, after the fecula, or *elaterium* has subsided, contains but very little of the active principle; and *that*, probably, from the fecula having imperfectly subsided.

"With regard to the *sensible* and *chemical* properties of the fecula, which subsides spontaneously from the juice contained within the cucumber, as above described, and which alone appears to be the true elaterium, I have already observed that it is a light, pulverulent substance, of a very pale green colour, approaching to yellowish white. To the *taste* it is acrid and bitterish. The juice itself, as it escapes from the cucumber, readily inflames the skin of the fingers and on

getting accidentally into the eye in one instance, it occasioned severe pain and inflammation, with an erysipelatous swelling of the eyelids, that continued till the following day. The fecula, in the dose of one-eighth of a grain, seldom failed to produce both vomiting and purging, and that often violently. Half this quantity, viz. one-sixteenth of a grain, generally excited considerable purging. From several trials I have made, it appears to operate in little more than half the dose of that obtained from Apothecaries' Hall; which, however, is far more efficacious than what is generally sold in the shops, the quality of which varies extremely. *Some* specimens have acted very well in half grain doses; *others* have produced no effect in the dose of two grains. These are either improperly prepared, or are greatly adulterated. The best and most active I have seen, was some which I obtained from Mr. Parrott, of Mitcham, who for several years raised the plant in his own garden, and prepared the elaterium in large quantity for the Apothecaries' Company.

“ Much of this medicine, as it is ordinarily met with in the shops, is of a dark green colour, approaching to black: it is likewise compact and heavy, and breaks with a shining resinous fracture. This is usually prepared by strong pressure of the cucumber, and consists, of course, in great part, of the ordinary juices, as well as the elaterium. It is very uncertain in its operation, and very weak, in comparison with that which has been properly prepared. The quantity is much increased by this mode of preparation; and hence it is sold at a much lower rate. The difference in price of this drug is extreme; the Apothecaries' Company charging sometimes as much as twelve shillings a dram, while it is sold at Corbyn's and some other shops, at four shillings. The quality, indeed, is superior at the Hall; but in no degree proportioned to the price. Yet I do not believe that either obtains an exorbitant profit; the difference arising chiefly from the mode of preparation, which, by the Apothecaries' Company, who adhere rigidly to the directions of the Pharmacopœia, is extremely wasteful, as I have satisfied myself by inspection.

“ With respect to the *chemical* properties of this substance, I shall enter no further into these, than is connected with the purposes of pharmacy.

“ *Water*, whether *hot* or *cold*, appears to have no action on pure elaterium. An infusion of eight grains, when filtered, produced no effect. Its insolubility in water, indeed, might be inferred from its spontaneous subsidence in the fluid: yet it is said, by Dr. Woodville, in his ‘*Medical Botany*,’ to be soluble both in spirit and in water. What it is that keeps the elaterium in a state of solution in the juice as first discharged, I have not ascertained.

“ The *elaterium* procured from the spontaneous subsidence of the juice, without expression, and which may be considered as in a state of purity, dissolves almost entire in alcohol. Of the best specimens from the Hall, spirit dissolves more than a half; while of inferior sorts, a *fourth* part is thus dissolved. The residue, after repeated affusions of spirit, is quite inert as a medicine. The active principle therefore may be considered as of a *resinous* nature; by which I only mean, however, that it is soluble in alcohol, which it tinges of a pale

green colour. When the spirit is slowly evaported, a resinous looking extract is obtained, which is very inflammable, and which is extremely active as a medicine; the *sixteenth* part of a grain generally producing considerable purging, and often vomiting. When the dose was increased to one-fourth of a grain, the effect was more considerable, and often took place in a very few minutes."

The foregoing detail was communicated to the president of the College of Physicians, who requested Dr. Paris to report upon them. He accordingly, in conjunction with Mr. Farraday, entered upon a new series of experiments; "The results of which will show, that although Dr. Clutterbuck found that an *eighth* part of a grain of elaterium seldom failed to purge violently, yet strange as it may appear, that not more than one grain in ten of elaterium, as it occurs in commerce, possesses any active properties, and that this decimal part is a vegetable proximate principle, not hitherto noticed," to which Dr. Paris gives the name of *Elatin*. A full detail of these experiments is given by this gentleman,* and he expresses the chemical composition of elaterium in the following manner :

Water	.	.	.	.	.	•4
Extractive	.	.	.	.	.	2•6
Fecula	.	.	.	.	.	2•8
Gluten	.	.	.	.	.	•5
Woody matter	.	.	.	.	.	2•5
<i>Elatin</i>	}	.	.	.	.	1•2
Bitter principle						
						<hr/> 10 grains.

Dr. Paris further remarks,

" That the whole of the *elatin* does not separate itself from its native juice by spontaneous subsidence, and that, on this account, the supernatant liquor possesses some powers as a cathartic. We cannot be surprised therefore that the elaterium of commerce should be a very variable and uncertain medicine : for independently of the great temptation which its high price holds out for adulterating it, which is frequently done with starch, it necessarily follows that where the active principle of a compound bears so small a proportion to its bulk, it is liable to be affected by the slightest variation in the process for its preparation, and even by the temperature of the season ; where pressure is used for obtaining the juices, a greater or less quantity of the inactive parts of the cucumber will be mixed with the *elatin*, in proportion to the extent of such pressure, and the elaterium will, of

* Vide Pharmacologia, edit. 6th, fol. 226.

course, be proportionally weak. There is one curious result obtained in my experiments which deserves notice, *viz.* that there is a bitter principle in the elaterium, very distinct from its extractive matter, and totally unconnected with its activity, for I diluted the solution obtained in experiment G. and swallowed it, but it produced upon me no effect, except that which I generally experience upon taking a powerful bitter—an increased appetite: and yet notwithstanding this fact, when in combination with *elatin*, it is far from being inert, since this body is considerably quickened by its presence.”

Mr. Barry has made some trials on the elaterium prepared according to the process of Dr. Clutterbuck, and found that out of ten grains of the first sample, 5·5 were soluble in spirit of the specific gravity of 809; of the second 6·2; and of the third 6·4; of that prepared by the same process at Apothecaries’ Hall, six grains were soluble. The residue, insoluble in the spirit, was administered to a patient, and ascertained to be perfectly inert.

“Mention is made, by Bergius, of *two* kinds of elaterium, the *white* and the *black*. The *white* is prepared from the juice that flows without pressure from the fruit simply cut open. The juice is suffered to form a deposit, which is dried by the heat of the sun. It seems to be the precise substance which I have described above. *Bergius* says it is dissolved by digestion in water, but this appears to be a mistake.”

“The *black* elaterium is prepared from the expressed juice of the cucumber altogether, and of course contains a great deal of extractive and colouring matter along with the real elaterium. This black preparation, instead of being light and pulverulent, is said to be heavy and glutinous when masticated, and sticks to the teeth; it is irritating to the fauces. It dissolves in considerable proportion in *water*, but only partially in *spirit*. It is also deliquescent in some degree. The white is more *resinous*, the black *gummy*, in its properties.

“The mode of preparing the elaterium in different pharmacopœias is far from uniform, and the medicine varies accordingly, independent of adulteration. According as more or less *pressure* is used, the medicine will approach to the *black* or *white* species, described above. It appears, from the account I have given, that pressure is not at all necessary in order to obtain the elaterium, and can only serve to deteriorate its quality, and render the dose uncertain. It is in this way that I account for the large doses prescribed by some writers, without any caution. Sydenham recommends two grain doses without reserve; and Woodville extends the dose from half a grain to three grains. These quantities where the medicine is in the most active form, would, I think, be often attended with danger.

“The method recommended by the London college, and which is strictly followed at Apothecaries’ Hall, is the least objectionable, as it directs only the slightest pressure to be made use of. It is, however, liable to objections in other respects, from it not having been known

that the elaterium resides *exclusively* in the juice lodged in the hollow of the cucumber. Hence this has been often wasted and lost. Another source of waste, and that to a great amount, is the bursting of many of the cucumbers during their removal from the country.

“ I have obtained the greatest quantity of the medicine by the following method :—

“ The cucumbers should be gathered when nearly as ripe as possible, and without violence, that might endanger their bursting*. They should then be wetted by the affusion of cold water, that less of the juice when they are cut may adhere to the external surface. In this state they should be cut through longitudinally, and the juice allowed to strain through a fine sieve, placed in a large earthenware vessel. The seeds and surrounding pulp should be scooped out upon the sieve, and washed with repeated affusions of cold water, by which they will be freed from all adhering juice. Something will be saved also by afterwards rinsing the split cucumbers themselves in cold water, from which a portion of elaterium may be collected.

“ After standing a few hours, a sediment is formed from which the clear liquor is to be poured off; it is then to be thinly spread on fine linen, and exposed to the air to dry: a gentle warmth may be employed without injury; but the access of sunshine destroys the fine green colour which the substance otherwise acquires.”—(*Clutterbuck.*)

POISONOUS EFFECTS.—Elaterium very much resembles the *Helleborus niger* in its effects, and when taken in over doses, produces hypercatharsis, vomitings, pain in the bowels, increased heat of skin, and all the usual symptoms attendant on inflammation of the abdominal viscera. Orfila ascertained by experiments on dogs, that the mucous membrane of the stomach was of a fiery red throughout, and although the intestines exhibited no traces of inflammation, the interior of the rectum was generally covered with rose-coloured spots.

From the experiments referred to, he infers,

“ 1st. That the first effects of elaterium are dependent on the inflammation it produces, as much as on its absorption.

“ 2nd. That death, which is the consequence of the administration or application of this substance, must be attributed to the lesion of the nervous system sympathetically affected.

“ 3rd. That besides, it exerts a special action upon the rectum.”

TREATMENT.—See *Helleborus niger* (Art. XI.)

MEDICAL PROPERTIES AND USES.—We presume, that after the excellent account of the properties of elaterium by Dr. Clutterbuck becomes known to our readers, they will not employ

* The Dublin College direct them to be gathered *before* they are ripe; by this means the chance of bursting is avoided; but it is a question whether the medicine is equally active as at a later period.

any of that substance unless it be prepared according to his directions.* It will then be found a good cathartic in obstinate constipations, and as a hydragogue in dropsy, it is not excelled. Dr. Clutterbuck† has not found any single medicine equally efficacious in checking the course of fever; with which view he generally employs an *eighth* or a *quarter* of a grain, two or three times in the twenty-four hours; and that for several days. In this quantity, it generally answers the double purpose of exciting vomiting and purging at the same time; and these evacuations are rendered more effectual in cutting short the fever, by previous blood-letting. Our esteemed friend, Mr. Sprague, whose communications on pharmacy very much enriched the pages of the Medical Repository, recommends the following pill-mass as the best form of giving elaterium as a cathartic:

R Elateri extracti (Dr. Clutterbuck's) gr. xv.

Potassæ Sulphatis ʒj.

Saponis Duri ʒj.

Zingiberis Rad. Pulv. ʒiss.

Potassæ sulphatem et elaterium simul tere, dein cum zingibere et postea cum sapone contunde, et adde aquæ quantum sufficit, ut fiat massa; in pilulas sexaginta dividenda. Dosis i. ad ij. omni hora donec plene solutus sit alvus.

Two grains of elaterium rubbed up with eight grains of hard soap, present us with a combination for a suppository, that may be advantageously used in apoplexy. Elaterium appears to have been formerly used in practice, and Simon Pauli recommends it when milder means have failed. "Lister and Hoffman both assert, that it produces often great heat and pulsation at the very extremities of the fingers;" and it sometimes affects the head. Sydenham and his cotemporaries used it for dropsy, but in consequence of its violent effects, arising from injudicious management, it fell into disrepute; till it was successfully used for the cure of hydrothorax, by Dr. Ferriar, of Manchester. It was once esteemed as an errhine.

OFF. PREP.—Extractum Elateri. *L. E. D.*

* Messrs. Barnes and Coster, of Brown Street, Bryanston Square, whose extracts are the best we know of, have prepared elaterium for the supply of the profession.

† Vide Observations on Epidemic Fever, p. 118. By H. Clutterbuck, M.D.



Cucumis Colocynthis.

CXXXVIII

CUCUMIS COLOCYNTHIS.

Bitter Cucumber.

Class XXI. MONÆCIA.—Order IX. SYNGENESIA.

Nat. Ord. CUCURBITACEÆ.

GEN. CHAR. Male. *Calyx* 5-toothed. *Corolla* 5-parted. *Filaments* 3.

Female. *Calyx* 5-toothed. *Corolla* 5-parted. *Pistil* 3-cleft. Seeds of the *gourd* with a sharp edge.

SPEC. CHAR. *Leaves* multifid. *Fruit* globose, smooth.

Syn.—Colocynthis. *Ger. Em.* 915; *Raii Hist.* 642; *Bauh. Hist.* 2. 232; *Moris. Hist.* t. 6. f. 1.

Colocynthis fructu rotundo major. *Bauh. Pin.* 313.

Colocynthis vulgaris. *Park. Theatr.* 160.

Colocynthis amara cathartica. *Lob. Ic.* 645.

Cucurbita Indica. *Camer. Epit.* 293. f.

Cucumis Colocynthis. *Lin. Sp. Pl.* 1092; *Willd. v.* 4. 611; *Ait. Hort. Kew. v. v. p.* 334; *Blackw. t.* 441; *Woodv. v.* 3. t. 175.

FOREIGN.—Coloquinte, Fr.; Coloquintida, It.; Pepinero Coloquintida, Sp.; Koloquinthen, Ger.; Indrdini, Hind.; Hunzil, Arab.; Indraváruni, Sans.

THIS plant, which belongs to the same genus with the rich melon for the dessert, and the cucumber well known for its cooling qualities, is a native of the Cape of Good Hope, Nubia, and Turkey; flowering from May till August. It appears to have been cultivated in this country in the days of Turner; and our figure was drawn from a specimen of the plant raised from the seeds in a hot-bed, at the Botanic Garden, Chelsea.

It is a trailing plant, bearing a considerable resemblance in its herbage to the cucumber. The root is annual, whitish,

branching, and strikes deep into the ground. The stems are slender, angular, branched, and rough, with short hairs. The leaves are on long petioles, of a triangular form, deeply and obtusely sinuated, of a bright green on the upper surface, paler and clothed with short hairs underneath. The flowers are solitary, axillary, and of a yellow colour. The calyx of the *male* flower is bell-shaped; the corolla monopetalous, bell-shaped, and divided at the margin, like the calyx, into five pointed segments; the filaments are three, two of which are bifid at the apex; they are all very short and inserted into the calyx; the anthers are linear, erect, and adhere together on the outer side. The *female* flower is like the male, but the filaments have no anthers; the germen is inferior, large, with a very short cylindrical style, and furnished with three stigmas, which are thick, gibbous, and bent outwardly. The fruit is a round berry or pepo, the size and colour of an orange, and smooth on the outside when ripe; trilocular, each cell containing numerous ovate, acute, compressed seeds, enveloped by a white spongy pulp.—Fig. (a) a male flower cut open; (b) front and back view of an anther; (c) a seed.

This plant is found abundantly in Turkey, and is supposed by many to be the plant described in the subjoined passage of holy writ “And one went out into the field to gather herbs, and found a wild vine, and gathered thereof wild gourds his lap full, and came and shred them into the pot of pottage: for he knew them not. So they poured out for the men to eat. And it came to pass, as they were eating pottage, that they cried out, and said, O thou man of God, there is death in the pot. And they could not eat thereof.” *

Burckhardt when travelling through Nubia found the ground covered with the plant, and states that it is very common in every part of the desert; and if we recollect right, it is mentioned more than once as being met with by Major Denham in his adventurous travels in Africa.

QUALITIES AND CHEMICAL PROPERTIES.—The medul-

* 2. Kings, 39, 40.

lary substance of the fruit of colocynth is the part used in medicine. It is white, soft, and porous. The seeds which are imbedded in it are nearly inert. To the taste it is intensely bitter. Boiled in water it gives out a large portion of mucilage, so as to form a liquor of a gelatinous consistence. This is less active than colocynth itself. Alcohol also dissolves only part of its active matter. Experiments seems to prove that colocynth pulp consists chiefly of mucus, resin, the bitter principle, and some gallic acid. According to M. Vauquelin, an alcoholic tincture of colocynth, yields by evaporation, a brittle substance, of a yellow colour, partially soluble in water, the residue consisting of a white filamentous mass, changing to yellow. He terms it *Colocyntine*, and considers the active principle of the pulp to reside in it.

POISONOUS EFFECTS.—Given in over doses, colocynth acts as a drastic irritating purgative. Dioscorides (lib. iv. c. clxxviii.) observes, that introduced into the rectum it produced a bloody flux; and Dr. Fordyce narrates a case of a woman who was subject to colic for thirty years in consequence of taking a strong infusion in beer. Orfila says, a man swallowed three ounces of colocynth, with the hopes of curing a gonorrhœa with which he had been attacked for several days. A short time afterwards he felt severe pains in the epigastrium, and vomited copiously. At the expiration of two hours, he had copious alvine evacuations; the lower extremities became bent, his sight was obscured, and he could only hear with great difficulty: a slight delirium came on, which was succeeded by vertigo. He was made to drink a great quantity of milk, which produced vomiting: ten leeches were applied to the abdomen, and the symptoms yielded by degrees.

TREATMENT.—See Art. XI. *HELLEBORUS Niger*.

MEDICAL PROPERTIES AND USES.—Both Hippocrates and Dioscorides were in the habit of employing this remedy as a drastic purgative in dropsy, lethargy, and maniacal cases; but were well acquainted with the violence of its effects if injudiciously administered. Its doses and combinations are now well

ascertained, and although it is scarcely ever prescribed in its simple state, no cathartic is more highly prized nor oftener used than the compound extract of colocynth, which combined with calomel, is the common aperient pill of the shops.

OFF. PREP.—Extract. colocynthidis. L.

Extract. colocynth. comp. L. D.

Pil. aloes cum colocynth. E. D.



Salix Russelliana.

CXXXIX

SALIX RUSSELLIANA.

Bedford Willow.

Class XXII. DICECIA.—Order II. DIANDRIA.

Nat. Ord. AMENTACEÆ, Lin. 50. Juss. 99.

GEN. CHAR. Male. *Catkin* cylindrical, imbricated. *Calyx* a scale. *Corolla* none. *Nectary* 1 or more glands at the base. *Stamens* 1—5.

Female. *Catkin* cylindrical, imbricated. *Calyx* a scale. *Corolla* none. *Style* bifid. *Capsule* 1-celled, 2-valved. *Seeds* downy.

SPEC. CHAR. *Leaves* lanceolate, acuminate, serrated, smooth. *Footstalks* glandular, or leafy. *Germen* tapering, stalked, longer than the scales. *Style* as long as the stigmas.

Syn.—*Salix fragilis*. *Woodv. v. 2. t. 198.?*

Salix Russelliana. *Willd. Sp. Pl. v. 4. 656; Fl. Brit. 1045; Eng. Bot. v. 25. t. 1808; Hook. Scot. 279; Purt. Mid. Fl. v. 3. 77.*

THIS species of Willow is a native of wet meadows, osier-holts, and hedges, throughout the midland and southern counties of England; flowering in April or May. It was long confounded with the *S. fragilis*, and was first made known for its valuable economical properties under the name of the Leicestershire, or Dishley Willow. The late Duke of Bedford brought it much into notice for its tall, handsome, rapid growth; and the bark was also found by Mr. Biggin, an able practical chemist, to contain more of the tannin principle than any other tree, except the oak. “Hence,” says Sir James Smith, “this bark, taken for *S. fragilis* has been found useful as a substitute for *Cinchona*, in agues; and if it has occasionally disappointed some medical practitioners, they probably chanced, in such cases to give the real *fragilis*. Tanners have sometimes been, in like manner, deceived, and they will find it worth their while to observe the character of the tree, in future, before they purchase its bark. On the other hand, when the tree in question was first recom-

mended for cultivation, by the name of the Leicestershire, or Dishley Willow, it was regarded with scorn, as “only the Crack Willow,” a sort notoriously useless. This ignorance and prejudice are now removed, and *S. Russelliana* is found the most profitable for cultivation of any species of the genus, (of which sixty-four are indigenous to Britain,) for the value of its timber as well as bark, the rapidity of its growth, and the handsome aspect of the tree. A famous willow, planted by Dr. Johnson, at Lichfield, is the *Russelliana*; as I am assured by the Rev. Mr. Dickenson, who has mentioned it in his edition of Shaw’s History of Staffordshire, p. 113, by the name of *fragilis*. We are obliged for the living specimens of the female plant, from which our figure was drawn, to Edward Forster, Esq. F.R.S. of Mansionhouse Street, and Hale End, Essex, Treasurer and Vice-President of the Linnean Society. We have not been able to procure the male catkins, nor have they been seen by Sir J. E. Smith.

The Bedford Willow is a tall tree, more handsome than the *Salix fragilis*. The branches are long, straight, and slender, very tough, round, flexible, and covered with a very polished bark. The leaves are lanceolate, very smooth, tapering at the base, not rounded, says the learned author of the “English Flora,” nor do they at any period approach to the broad, ovate form of the crack willow, with a stouter midrib, and are strongly, and rather coarsely, serrated throughout. The footstalks are smooth, channelled, glandular, either along their edges, or about their summit, where they occasionally bear two or more lanceolate leaflets. The stipulas are half-ovate, toothed, or cut, and sometimes are altogether wanting. The female catkins are longer and more tapering than *fragilis*, and their common receptacle less downy. The calyx is oblong, either hairy or having a deciduous scale. The germen is lanceolate, tapering, smooth, on a smooth stalk; at whose base, on the inside, is a large, abrupt, solitary nectary. The style is equal in length to the deeply divided stigmas. The germen protrudes beyond the scale, nearly half its own length.

DISTINCTIVE CHARACTERS.—The whole hue of *Salix Russelliana* is lighter and brighter than that of *fragilis*, especially the leaves

which are more firm, narrower, tapering at the base; their serratures more coarse and irregular, and the midrib considerably stouter. The glands on the footstalk sometimes become leaflets. The germen is longer and more tapering, with a longer stalk and style. In *fragilis*, the germen is ovate, and scarcely, if at all, longer than the scale. *Salix Errhartiana*, or the Hexandrous German Willow, bears a considerable affinity to the present species, but its leaves are much smaller, more elliptic-lanceolate, with finer, closer serratures, and the scales of the catkins shorter and rounder. This valuable species may be distinguished even in winter, from the *fragilis*, when stripped of its leaves, “by its much more handsome and straight mode of growth, instead of the branched decussating each other, or being set on obliquely, in the very unsightly manner of that tree.”

QUALITIES AND CHEMICAL PROPERTIES.—The bark of this species of willow agrees in its sensible properties with the others, excepting that it has been found to contain a much larger proportion of tannin. It is on this account that it has been strongly recommended by Sir J. Smith, as preferable for medicinal purposes; to which opinion we cordially subscribe. Neither this, nor the bark yielded by the *S. fragilis* and *S. caprea*, have undergone, as far as we know, any elaborate chemical analysis, but under the next subject will be found a minute detail of Bouillon La Grange’s experiment on the *S. alba*.

MEDICAL PROPERTIES AND USES.—Although the bark of the *Salix Russelliana*, is, on the authority of Sir J. E. Smith, best adapted for medicinal purposes, it was that of the *S. alla* which was first used by the Rev. E. Stone, of Chipping-Norton, whose paper in Vol. LIII. of the Philosophical Transactions introduced it to notice; and from which we make the following extract:—“I have continued to use it in two scruple doses, repeated every four hours between the fits, as a remedy for agues and intermitting disorders, for five years successively and successfully. It hath been given, I believe, to fifty persons, and never failed in the cure, except in a few autumnal and quartan agues with which the patients had been long and severely afflicted: these it reduced in a great degree, but did not completely take them off; the patient, at the usual time for the return of his fit, felt some smattering of his distemper, which the incessant repetition of these powders could not conquer: it seemed as if their power could reach thus far and no farther, and I did suppose that it would not have long continued to reach so far, and that the distemper would have soon returned with its pristine violence; but I did not stay to see the issue. I added one fifth part of Peruvian bark to it, and with this small auxiliary it totally routed its adversary.”

SALIX FRAGILIS.—*Crack Willow*.

SPEC. CHAR. *Leaves* ovate-lanceolate, pointed, serrated, very smooth. *Germen* ovate, nearly sessile, smooth. *Scales* oblong, about equal to the stamens and pistils. *Stigma* cloven, longer than the style.

Syn.—*Salix fragilis*. *Lin. Sp. Pl.* 1443; *Willd. v. 4.* 669; *Fl. Brit.* 1051; *Eng. Bot. v. 26. t.* 1807; *Hook. Scot.* 279.

THE Crack Willow is a native of Sweden, Germany, and England. With us it is not unfrequent in low marshy grounds, about the banks of rivers, flowering in May. Several trees of this species are to be seen at Millbank in Westminster; and in Battersea Fields. It is a large bushy tree, known by the crooked position of its branches, which are set on obliquely, somewhat crossing each other, and not continued in a straight line, as in *S. Russelliana*. They are round, very smooth, with a brown polished bark, and so brittle at the base in spring, that with the slightest blow they start from the trunk; but the same thing is observed in the *S. decipiens*, and several other willows. The leaves are four or five inches long, ovate-lanceolate, very smooth except when young, pointed, with blunt, often unequal, but not coarse serratures; of a dark colour on the upper surface, paler underneath, broadest toward the base, and when full grown become rounded at that part. The footstalks are smooth; seldom producing small accessory leaflets. The stipulas are half-heart shaped, and strongly serrated. The *male* catkin is pale, cylindrical, with rounded concave, downy scales, and from 2 to 5 stamens to each floret. The *female* catkin resembles the male, having the germen nearly sessile, smooth, ovate, obtuse, rather compressed, with a rounded nectary at its base, on the contrary side to the scale. The style is very short, with deeply divided spreading stigmas.

QUALITIES AND USES.—Whatever economical or medical uses have been attributed to this willow belong to the preceding, which has very generally been mistaken for it.

SALIX ALBA.—*Common White Willow.*

SPEC. CHAR. *Leaves* elliptic-lanceolate, pointed, serrated, silky on both sides; the lowest serratures glandular. *Stamens* hairy. *Germen* smooth, nearly sessile. *Stigmas* deeply cloven. *Scales* rounded.

Syn.—*Salix. Raii Syn.* 447; *Ger. Em.* 1389; *Matth. Valgr.* v. 1. 180.*f.*

Salix alba. Lin. Sp. Pl. 1449; *Willd.* v. 4. 710; *Eng. Bot.* v. 34. t. 2430.

THE White Willow is indigenous, very common in moist woods, and on the banks of rivers, blossoming in May. It is a tall tree with a cracked bark, and numerous widely spreading branches, which are silky when young. The leaves are alternate, on short footstalks, lanceolate, pointed, tapering towards each end, acutely and regularly serrated, silvery and grey on both sides, with close pressed silky pairs. The stipulas are sometimes wanting. The catkins are on short stalks, with three or four spreading leafy bractees, cylindrical, rather slender, obtuse, about an inch and a half long, with elliptical, lanceolate, brown, fringed scales. The filaments are hairy in their lower part, with roundish yellow anthers. The germen is nearly sessile, smooth, ovate-lanceolate, longer than the scale, with short thick cloven stigmas. The capsule is ovate, brownish, and smooth.

QUALITIES AND CHEMICAL PROPERTIES.—The bark of this, as well as of the other species, should be taken from branches about four inches in circumference. They all agree in their sensible qualities, being inodorous, but of a bitter astringent taste. The decoction of white willow bark has a dark reddish colour, and according to Bouillon La Grange, when repeated decoctions are made with the same portion of bark, the last is always deepest coloured. It is precipitated abundantly by glue, carbonate of potass, and carbonate of ammonia. Lime water throws down a precipitate at first blue, and afterwards buff-coloured. Sulphate of iron throws down a very dark green precipitate. Alcohol separates white flakes. When evaporated to dryness, a reddish brittle substance remains, which has a very bitter taste, and does not attract moisture from the air. When alcohol is digested over this bark, it acquires a greenish-yellow colour. The tincture is rendered muddy by water. When evaporated, it leaves a brilliant yellow substance of a very bitter taste, which melts at a moderate heat, and emits an aromatic odour. These experiments indicate the presence of tannin, bitter principle, extractive, and gluten in this bark.—(*Annales de Chimie*, tom. 54. p. 290.)

SALIX CAPREA.—*Great Round-leaved Willow.*

SPEC. CHAR. *Stem* erect. *Leaves* roundish-ovate, pointed, serrated, waved; and downy beneath. *Stipulas* somewhat crescent shaped. *Germen* stalked, ovate, silky. *Stigmas* nearly sessile, undivided. *Capsules* swelling.

Syn.—*Salix latifolia rotunda. Raii Syn.* 449; *Bauh. Pin.* 474.

Salix caprea. Lin. Sp. Pl. 1448; *Willd. v. 4.* 703; *Eng. Bot. v. 21. t.* 1448.

THE Great Round-leaved Willow is very common throughout Europe in rather dry woods and hedges, blossoming in April. This species grows to the size of a moderate tree, with spreading brown or purplish, minutely downy branches. The leaves are larger and broader than any other of the genus, of a deep green above, with a downy rib, and densely tomentose and veined underneath; they are generally broadly ovate, sometimes elliptical or rounded, pointed, either rounded or slightly heart-shaped at the base, varying in length from two to three inches, waved, and more or less serrated. The stipulas are heart-shaped, acute, serrated, and glaucous, assuming a crescent shape as the branch swells. The catkins are numerous, much earlier than the foliage, almost sessile; the barren ones much larger than in any other British species, *S. oleifolia* excepted, being above an inch long, thick, oval, and of a bright yellow colour. The scales are ovate, blackish, and very hairy. The stamens are longer than the scale, with oblong yellow anthers. The germen is ovate-lanceolate, on a hairy stalk, with the stigmas nearly sessile, oblong, thick, and undivided.

MEDICAL PROPERTIES AND USES.—The bark of these different species of Willow are all more or less tonic and astringent, and we assert from extensive experience of their use, that they are often capable of curing intermittent fevers uncombined with other medicines. They are, however, much more efficacious if united to carbonate of iron, or a small portion of cinchona bark. Willow bark is also administered advantageously in general debility; in dyspepsia and chronic diarrhoea; and is said to be very efficacious in the last stages of phthisis pulmonalis, and in hectic fever. It may be given in powder, in doses of half a drachm to a drachm, combined with aromatics, myrrh, &c. as may be required.



Humulus Lupulus.

HUMULUS LUPULUS.

The Hop.

Class XXII. DICECIA.—Order V. PENTANDRIA.

Nat. Ord. SCABRIDÆ, Lin. URTICÆ, Juss.

GEN. CHAR. Male. *Calyx* 5-leaved. *Corolla* 0.
Anthers with 2 pores.

Female. *Scales* of the catkin large, concave,
 oblique, entire. *Corolla* 0. *Styles* 2. *Seed* 1,
 within a leafy calyx.

SPEC. CHAR. 0.

Syn.—*Lupulus mas et foemina*, *Raii Hist.* 156; *Bauh. Pin.* 298. 1, 2.

Lupulus salictarius, *Ger. Em.* 885; *Fuch.* 164; *Plin. Hist. Nat. l.* 21. n. 15.

Lupulus seu sativus, seu sylvestris, *Park.* 176; *Trag.* 812.

Lupulus n. 1618. *Hall. Hist.*; *Dod. Pempt.* 409. 1; *Camer. Epit.* 933, 934.

Humulus Lupulus, *Lin. Sp. Pl.* 1457; *Willd. v.* 4. 769; *Eng. Bot.* 427.

FOREIGN.—*Houblon grim pant*, Fr.; *Luppolo*, Ital.; *Hoblon*, Span.; *Hopfen*, Ger.

THE Hop is a perennial-rooted plant with an annual stem, and is the only species of the genus. It is a native of Britain and most parts of Europe, and is found in our hedges; flowering in June, and ripening its seeds in September.

From a branching root, rises several twining, rough, angular, flexible stems, which on poles, and in hedges, frequently reach the height of twenty feet or more. The leaves are opposite, in pairs, cordate, serrated, entire or lobed, scabrous, of a deep

green colour, and sustained on long foot-stalks, which, as well as the leaves, are rough with minute prickles. Between the leaf-stalks are a pair of cordate, entire, reflected, smooth stipules. The flowers, which are on distinct plants, are axillary or terminal, and furnished with bracteas. The *males* are in drooping panicles of a pale green colour: the calyx consists of five oblong, concave minutely serrated leaflets: there is no corolla: the filaments are five, capillary, and very short with oblong anthers, opening at the apex by two pores. The *females* are in axillary stalked, drooping cones, or strobiles, composed of membranous scales of a pale greenish colour, and containing the germen, which is small, having two very short subulate, reflex styles, and awl-shaped downy stigmas. The calyx incloses the seed at its base, which is roundish, of a brownish colour, and truncated. Fig. (1) represents the male plant; fig. (2) the female. Fig. (a) is a male flower magnified; (b) the front of an anther considerably magnified, showing the two pores by which they open at top; (c) the back of an anther magnified; (d) a single scale of the catkin; (e) the germen with the two styles.

In the counties of Kent and Surrey, where the female plants are cultivated extensively, for the use of the brewers, the Hop-growers distinguish several varieties, as the early white, the long white, the oval, and the garlic Hop.

The Hop is also indigenous to America. Its use for the preservation of beer was first introduced from Flanders, in the fifteenth year, of Henry VIII. And Parkinson says, “the ale which our forefathers were accustomed only to drink, being a kind of thicker drink than beere, is now almost quite left off to be made, the use of Hoppes to be put therein, altering the quality thereof, to be much more healthfull, or rather physicall, to preserve the body from repletion of grosse humours, which the ale engendered.” Like most innovations, the Hop had many enemies at first, Blith informing us, in his “English Improver Improved,” p. 240, that the city of London petitioned parliament against two nuisances, viz. Newcastle coals “and Hops, in regard they would spoyle the taste of drink, and endanger the people.”

CULTURE.—For an account of the culture and management of the Hop the reader may consult “ Loudon’s Encyclopedia of Agriculture,” and “ Miller’s Gardener’s Dictionary,” by Prof. Martyn.

QUALITIES AND CHEMICAL PROPERTIES.—The strobiles are picked when ripe, and are dried by artificial heat. They have a fragrant, aromatic, but oppressive odour; and a pungent, bitter, slightly astringent taste. By infusion in water these virtues are extracted; by distillation an essential oil is obtained; by boiling the aromatic properties are dissipated. “ The watery infusion has a pale straw colour, is rendered muddy by the mineral acids; alkalies deepen its colour; it strikes an olive with the sulphate of iron; is precipitated by alcohol, solutions of acetate of lead, nitrate of silver, and tartarized antimony; and when rubbed with magnesia, or lime, a rod dipped in muriatic acid, discovers the presence of ammonia. The ethereal tincture, when evaporated on water, leaves a pellicle of greenish, intensely bitter resin, and deposits some extractive.”*

Dr. Ives of New York, has ascertained by various experiments, that Hops, by being beaten and sifted, yield a powder which he terms *lupulin*, that contains a very subtle aroma, which is taken up by water and alcohol, and which is rapidly dissipated at a high heat; that the lupulin contains an extractive matter which is soluble only in water; that it contains tannin, gallic acid, and a bitter principle which are soluble in alcohol and water; that it contains resin which is soluble in alcohol and ether, and wax which is soluble only in alkalies and boiling ether; that it contains neither mucilage, gum, nor gum resin; that the aromatic and bitter properties of the lupulin are more readily and completely imbibed by alcohol than by water, and much sooner by both when hot than when cold; that about five-eighths of the whole substance is soluble in water, alcohol, and ether, there being about three-eighths of it vegetable, fibrous matter; 120 grains of lupulin contain about

Tannin	. . . . .	5 gr.
Extractive matter	. . . . .	10
Bitter principle	. . . . .	11
Wax	. . . . .	12
Resin	. . . . .	36
Lignin	. . . . .	46

Hops from which all the lupulin had been separated when acted

* Thompson.

upon by water, alcohol, &c. gave a portion of extract which, however, possessed none of the characteristic properties of the hop.

Having ascertained that the lupulin was the only important part of the hop as regarded brewing, Dr. Ives next endeavoured to ascertain the quantity afforded by a given weight of hops: 6lbs. of hops from the centre of a bag were put into a light bag, and by thrashing, rubbing, and sifting, 14 ounces of lupulin were separated. It is supposed, therefore, that dry hops would yield about a sixth part of their weight of this substance.

Two barrels of beer were then made, in which 9 oz. of lupulin were substituted for 5 lbs. (the ordinary quantity) of hops. The result confirmed every expectation. Though the quantity of lupulin was less than usually enters into the same quantity of wort, and though the weather during June was unusually warm, and therefore unfavourable to the beer, still, at the end of five weeks, it was very fine. As a further experiment,—equal quantities of the beer were exposed in open phials to the sun, and a scruple of lupulin was added to one of them; this was unchanged at the end of fifteen days; the other became mouldy and sour in ten days.

The advantages which promise to result from the discovery that lupulin may replace the white hop in brewing, are, the diminished expenses of conveyance and storage, the facility of preserving it from the air, the non-absorption of wort by the hops, and the absence of a useless nauseous extractive matter which remains in the leaves.

Since Dr. Ives published his account, he has edited two editions of Dr. Paris's *Pharmacologia*, in the last of which he says: "Soon after the publication of my essay on the hop in 1819, I discovered the incorrectness of my deduction and statement, that the lupulin contained *no essential oil*. . . . As to the general results of my experiments, detailed in my paper, I at that time attached importance to them, from the belief that they would ultimately lead to vast economical improvement, in the permanent preservation of the only valuable portion of the hop, and in the manufactory of malt liquors. So far as can be determined from its sensible properties, a quantity of lupulin which has been kept in bottles for three years, and which is now by me, has lost none of its aromatic flavour, nor is in any respect deteriorated by keeping. That the lupulin possesses all the virtues of the hop essential to the good quality and preservation of beer, is demonstrably evident from an experiment made in 1820, by an experienced and respectable brewer in this city. He obtained, by threshing and sifting, from a bag of hops weighing about 150 pounds, 21 pounds of lupulin. Of this, and the usual quantity of other ingredients, he made forty barrels of beer; the quantity into which he ordinarily put 150 pounds of hops. The summer following, and not less than four or five months after it was made, I had an opportunity of comparing this beer with that manufactured about the same time in the usual manner. The former was less bitter, but in no respect inferior to the latter. It would doubtless have been better than it was, had *all* the lupulin been separated from the hops used in the experiment, but that was impracticable. There can therefore now be no doubt of the correctness of my former opinion, that if any

mechanical means can be devised, by which the lupulin may be easily, and readily, separated from the strobiles, it will consummate an improvement of incalculable value, in the preservation of hops, and the art of brewing."

The bitter principle of the Hop is soluble both in alcohol and water, while the extractive matter is soluble only in water; and M. Payer, and A. Chevalier, have confirmed Dr. Ives's assertion, that the properties of the Hop reside in the yellow grains scattered over the membranous scales of the female flower. They also discovered a volatile oil in lupulin, which is similar in odour to the Hop, but much more penetrating, narcotic, and very acrid in the throat. On account of its volatility, and solubility, to a great extent in water, it was not, at first, detected by Dr. Ives.

The following is M. Planche's method of purifying lupulin.

"To separate the sand from the lupulin, put it into water; shake it for a few minutes; decant that which is held in solution by the water, and a dark-coloured sand is deposited. Repeat the process several times, and spread the lupulin, which is insoluble in water, on bibulous paper; let it drain, and then dry it in the air, neither exposed to the sun, nor to a temperature above 76° (Faht.). It should be prepared yearly, and this cleansing process must be quickly conducted, or it will undergo a change."

The young shoots, blanched, are sometimes eaten as a substitute for asparagus; and from the *binds* coarse sacking has been manufactured, and a yellow dye extracted.

ECONOMICAL USES.—Hops are boiled in the wort, partly, to communicate their peculiar aromatic flavour; partly, to cover the sweetness of undecomposed saccharine matter, and in consequence of the gallic acid, and tannin they contain, to separate a portion of a peculiar vegetable mucilage, somewhat resembling gluten, which is diffused through the beer. The compound thus produced, separates in small flakes like those of curdled soap, by which the beer is rendered less liable to spoil; nothing contributing more to the conversion of beer, or of any other vinous fluid, into vinegar, than mucilage. Hence all full-bodied and clammy ales, abounding in mucilage, and which are generally ill fermented, are apt to run into the acetous fermentation.

SURROGATES.—A compound of extract of quassia, and li-

quorice, is used by brewers, to economise both malt and hops, and is termed "*multum*;" and for imparting an intoxicating effect, they dissolve an extract of *cocculus indicus*, which they call "*Black Extract*."* The following vegetable productions have been, and some of them still are, substituted in part for Hops; but as few of them contain tannin, and none in sufficient quantity, they simply impart a bitterness, unallied to the aromatic taste of the Hop, and possessing scarcely any of the chemical qualities for which that plant is more particularly employed in beer:—

Centaurea benedicta, blessed thistle,
Centaurea calictrapa, star-thistle,
Menyanthes trifoliata, marsh-trefoil, buckbean,
Teucrium scorodonia, wood-sage,
Glechoma hederacea, ground ivy, sometimes called ale-hoof, or tun-hoof,

Ginger, gentian, seeds of colocynth, broom, quassia, aloes, horehound.

MEDICAL PROPERTIES.—Hops are generally considered to be tonic, diuretic, and somewhat narcotic. For the latter virtues they cannot be depended on; but in a woman we treated for a compound fracture of the tibia, a drachm of the tincture procured sound and refreshing sleep of several hours' duration, after most of the other narcotics had been given in large doses, ineffectually.

An infusion of the Hop has been occasionally recommended in the place of the decoction of sarsaparilla, but is a substitute, on which we should place but little reliance. Dr. Chapman of America, in his "*Therapeutics*," recommends it for nephritis, and for spasmodic pains of the uterus, occurring after parturition; and Dr. Maton speaks highly of the utility of Hop in athritic rheumatism, and asserts that it allays pain, produces sleep, and allays the frequency of the pulse, at the same time that it increases its firmness. Externally, a decoction of Hop has been advantageously used for painful tumefactions, and the

* Accum.

powderr ubbed up with lard, was recommended by the late Mr. Freake, as an application to cancerous ulceration. A cataplasm made of an infusion of the dried strobiles, has been applied to ill-conditioned and sloughing ulcers with decided benefit.

“ With regard to the medicinal efficacy of Hops, (says Dr. Ives,) every accurate observer must acknowledge, that they possess little merit, if administered according to the directions given in our pharmacopœias. The quantity of proof spirit given in the tincture, would produce stimulating effects, independent of any properties which it imbibes from the Hops; and, although its action may be modified by their combined agency, so as, in some measure, to increase the cordial and invigorating influence of the alcohol, it is difficult to conceive, that the tonic, or narcotic virtues of the Hop, should be sufficiently concentrated, to produce much remedial benefit. It is otherwise with the pharmaceutical preparations of the *lupulin* which I have been accustomed to prescribe. Pretty extensive observation has confirmed my former opinion, that diseases which are the consequence of exhausted excitability, or more directly, of a deranged state of the stomach and bowels, are certainly much relieved by this medicine. It frequently induces sleep and quiets nervous irritation, without causing costiveness, or impairing, like opium, the tone of the stomach, and merely increasing primary disease. The preparation most commonly used in this city, is the tincture prepared by digesting ℥ij of the lupulin in Oj of alcohol. Dose from ʒj to ʒij.

Inquietude and watchfulness, connected with excessive irritability in all its gradations, from the restlessness consequent upon exhaustion and fatigue, to the most uncontrollable paroxysm of delirium tremens, are more frequently allayed by this remedy than any other in ordinary use. Another eligible mode of exhibiting the lupulin is in pills. From two to four pills, each containing three grains of the powder, may be given at a dose. Dr. Desroches, who published a Dissertation on the Hop in 1803, supposed that its narcotic principle resided in the essential oil; but is it not more than probable that this was a conjecture arising from the imaginary soporific virtues of the Hop pillow. It requires much

experience, and accurate observation, to speak confidently upon the subject; but from having frequently used the lupulin collected from old Hops, in which little aroma seemed to remain, and also the extract prepared by decoction, by which process the essential oil is chiefly dissipated, I am still of opinion, that its narcotic properties are in the resinous extract."

DOSE.—The dose of the extract may be from five to ten grains; of the tincture from half a drachm to a drachm, once or twice a day.

OFF. PREP.—*Extractum Humuli.* L.
Tinctura Humuli. L. E.

FORMULÆ.

Powder of Lupulin.—Take of Lupulin 1 part.
 White sugar 2 parts.

Rub the sugar into a coarse powder, then add the lupulin to it by degrees, and blend them intimately together. In the *Pharmacopée Française*, this is called *M. Magendie's form*, and the sugar appears to be added merely to divide the lupulin, which forms an adhesive mass by being beat. Such a mass is easily formed into pills, and is the best preparation of lupulin that can be used, if we wish to rely simply on its effects.

" *Tincture of Lupulin.*

Take of Lupulin . . . ʒj.
 Alcohol . . . ʒij.

Digest for six days in a close vessel, press out the liquor, filter it, and add a sufficient quantity of alcohol to make ʒiij of tincture." Previously to maceration, the lupulin should be divided, by beating it up with sand. The *dose* may be from thirty drops, to a drachm.

Syrup of Lupulin.

Take of Alcoholic Tincture of Lupulin 1 part.
 Simple Syrup 7 parts.

Pommade de Lupuline.—(*Pharmacopée Française.*)

Take of Lupulin, bruised 1 part.
 Lard 3 parts.

Dissolve in a warm bath, and strain it through a lawn sieve. This ointment is recommended as a substitute for that of Mr. Freake's, already adverted to.



Pistacia Terebinthus.

CXXIX

PISTACIA TEREBINTHUS.

Chian Turpentine Tree.

Class XX. DICECIA.—Order V. PENTANDRIA.

Nat. Ord. AMENTACEÆ, Lin. TEREBINACEÆ, Juss.

GEN. CHAR. Male, *Calyx* 5-cleft. *Corolla* 0. Female, *Calyx* 3-cleft. *Corolla* 0. *Styles* 3. *Drupe* 1-seeded.

SPEC. CHAR. *Leaves* pinnate, with a terminal one; leaflets about seven, ovate-lanceolate, rounded at the base. *Flowers* paniced. Segments of the *calyx* awl-shaped, longer than the stamens.

Syn.—*Terebinthus*. *Camer. Epit.* 51; *Ger. Em.* 1433; *Matth. Valgr.* 1. 101; *Raii Hist.* 1577; *Clus. Hist.* 1. 15; *Bauh. Hist.* 1. 279.

Terebinthus vulgaris. *Bauh. Pin.* 400; *Tourn. Inst.* 579; *Duham. Arb.* v. 2. 306. *t.* 87.

Pistacia Terebinthus. *Lin. Sp. Pl.* 1455; *Willd.* 4. 752; *Villars Dauph.* 2. 547; *Forsk. Ægypt. cent.* 8. *p.* 219; *Woodv. t.* 153; *Scop. Carn.* 2. *n.* 1218; *Blackw. t.* 478; *Stokes* 4. 531.

FOREIGN.—*Térébinthe*; *Pistachier sauvage*, Fr.; *Terebinto*, Ital.; *Cornicabra*, Sp.; *Terpentinbaum*, Ger.

THIS is the tree which affords the Chian, or Cyprus Turpentine. It is a native of the south of Europe and north of Africa. It is cultivated in the islands of Scio, (the Chios of the ancients,) and Cyperus, and has been long known in this country as an ornamental plant. There is a fine female tree at Chelsea Garden, near the gate, from which the accompanying figure was designed.

The *Pistacia Terebinthus* is of low stature, and seldom attains the height of thirty or thirty-five feet. The trunk and branches are invested with a dark grey or rugged blackish bark, and bent in all directions. The leaves are pinnate, and consist of three pair of ovate-oblong, entire, smooth leaflets, with an odd one, all of a dark green colour, and somewhat curved backward. They are, in our climate, deciduous, and according to Sir James Ed. Smith appear by Dr. Sibthorp's drawings, to be so in Greece. The young leaves have a beautiful reddish hue, and are thin, smooth, and shining. The flowers which appear in May and

June are on different trees, in large, very compound panicles. In the *male* the calyx consists of one leaf, and is divided into five deep equal segments. There is no corolla. The filaments are four or five in number, capillary, very short, and supporting large, brown, erect, oblong quadrangular anthers, of two cells bursting lengthwise. The *female* are placed on a common peduncle in alternate order, consisting of a calyx of three small squamous segments, and a roundish somewhat triangular germen, supporting three erect styles, with obovate, reflexed, clubbed stigmas. The fruit is a drupe, scarcely bigger than a large pea, ovate, smooth, a little compressed, and of a reddish colour. Galls of the same shape are found on the leaves, and very large pod-like ones, are often produced from the young branches, as the old figures represent.

Cyprus or Chian turpentine, which is furnished by this tree, is procured by wounding the bark of the trunk in several places, during the month of July, leaving a space of about three inches between the wounds; from these the turpentine exudes and is received on stones, upon which it becomes condensed by the coldness of the night, so as to admit of being scraped off before sunrise. To free it from extraneous substances, it is again liquified by the sun's heat, and pressed through a strainer, when it is fit for use. The quantity produced is so very inconsiderable; that large trees, sixty years old, yielded only two pounds nine ounces and six drachms; but in the eastern part of Cyprus and Chio, the trees afford somewhat more, though still so little as to render its price high, on which account it is much adulterated with the other turpentines.

QUALITIES.—The best Chio turpentine is generally about the consistence of thick honey; is very tenaceous, clear, and almost transparent; of a white colour inclining to yellow, and of a fragrant smell; moderately warm to the taste, but free from acrimony and bitterness.

MEDICAL PROPERTIES.—The medical properties of the turpentines has been fully detailed under the article PINUS, in this work, and the Chio turpentine, although more pure than the exudations from this genus of plants, simply possesses the same virtues.



Pistacia Lentiscus.

PISTACIA LENTISCUS.

Mastic Tree.

SPEC. CHAR.—*Leaves* abruptly pinnate; *leaflets* ovate-lanceolate. *Flowers* racemose. Segments of the *calyx* ovate, shorter than the stamens.

Syn.—Lentiscus. *Ger. Em.* 1432; *Park.* 1524; *Raii. Hist.* 1597; *Camer. Epit.* 50; *Bauh. Hist.* 1. pars 1. p. 285; *Lob. Ic.* 2. 96; *Clus. Hist.* 84. t. 85; *Dod. Pempt.* 871; *Matth. Vulgr.* 1. 99; *Backw. Herb.* 1. t. 195; *Tourn. Voy.* 1. p. 375.

Pistacia Lentiscus. *Lin. Sp. Pl.* 1455; *Willd.* v. 4. 753; *Hort. Kew. ed.* 2 d. v. 5. p. 381; *Woodv. t.* 412; *Bot. Mag.* v. 45. t. 1967.

FOREIGN.—*Lentisque*, Fr.; *Lentisco*, It. Sp. and Port.; *Der Matixbaum*; *Das ewige Holz*, Ger.; *Sakas*, Turk.; *Roomie mustakie*, Hind.; *Arah*, Arab.

THE Mastic-tree is a native of the south of Europe and the Levant, and appears by Evelyn's *Kalendarium Hortense* to have been cultivated in Britain so early as 1664. It is less hardy than the Chian turpentine-tree, requiring the shelter of a greenhouse, hence it never attains here any degree of perfection. In Italy it is very common, flowering in April, as well as in the island of Scios, where its resin, called mastic, is chiefly obtained, and where different varieties of this shrub are consequently cultivated with care. It differs from every other known *Pistacia* in having no odd leaflet, as well as in its simply racemose inflorescence.

This tree, which seldom exceeds twelve feet in height, and eight or ten inches in diameter, is covered with a smooth brown bark, and towards the top sends off numerous branches. The leaves are abruptly pinnate, consisting of five or six opposite pairs of narrow ovate leaflets, of a dark green colour on the upper, and pale on the under side. They are smooth, pointed at each end, and tipped at the point with a minute curved spine; sessile or closely attached to the common footstalk, which is winged or furnished with a narrow foliaceous expansion on each side,

running from one pair of leaflets to the other. The flowers, which appear in simple axillary racemes in April and May, resemble those of the former species. In the *male* flowers, the calyx is divided into five minute ovate segments; the filaments are four or five in number, very short, and supporting large, brown, erect, quadrangular anthers. The *female*, like those of the male, have no corolla, and are placed upon a common peduncle in alternate order; the calyx consists of three small squamous segments; the germen is egg-shaped, larger than the calyx, and supports two or three styles, with reflexed clubbed stigmas. The fruit is an obovate, smooth reddish drupe, containing a smooth nut. Fig. (a) represents a female flower magnified; (b) male flowers; (c) back view of a female flower, shewing the five-cleft calyx.

In the island of Chios the officinal mastic is obtained most abundantly, according to Tournefort,* by making transverse incisions in the bark of the tree about the beginning of August, from which the resin exudes in drops, and hardening on the trees, or running down and concreting on the ground, is thence collected for use. The time chosen for making these incisions is the first of August, when the weather is very dry; in the following day the mastic begins to appear in drops, which continue to exude till the latter end of September. According to Olivier (Travels in the Ottoman Empire) mastic is gathered in twenty-one villages of the island of Scio; and the incisions, he says, are made from the 15th to the 20th of July, according to the Greek calendar. Cloths are frequently placed under the tree, so that the mastic which trickles from it may not be impregnated with earth and other impurities. By the regulations made in the island, the first gathering cannot take place before the 27th of August. It lasts eight successive days, after which fresh incisions are made in the trees till the 25th of September, and then the second gathering is made, which likewise lasts eight days. After this time the trees are cut no more, but the mastic which continues to run is collected till the 19th of November, on the Monday and Tuesday of every week. It is afterwards

* *Voyage du Levant*, v. i. p. 44.

forbidden to gather this production, which in the twenty-one villages of Scio, amounts on an average to 50,000 *okes*, and even more: twenty-one thousand belong to the aga, who farms this commodity, and are delivered by the cultivators in payment of their personal impost. They are paid for the surplus at the rate of 50 *parats* per *oke*, (nearly 16 sous the pound,) and they are prohibited, under very severe penalties, from selling or disposing of it to any other than the aga who farms it. That of the best and finest quality is sent to Constantinople, for the palace of the Grand Signior; that of the second quality is intended for Cairo, and passes into the harems of the Mamelukes. The merchants generally obtain a mixture of the second and third quality. The lentisc or mastic-tree is raised in various parts of Europe, particularly in Italy and Portugal, but no resin is said to issue from it in these climates.

QUALITIES AND CHEMICAL PROPERTIES.—Mastic, which is brought to us in yellowish semi-transparent brittle grains or tears, is nearly inodorous, except when rubbed or heated, when it exhales an agreeable fragrant odour. It is almost insipid; and when chewed it is soft and tough, like wax, but soon becomes white, opaque, and brittle; hence it is frequently employed by surgeons for stopping carious teeth. In Turkey great quantities of it are chewed for sweetening the breath and strengthening the gums; and it is to this use of the resin as a masticatory, that it is supposed to owe its name. Its specific gravity is 1,074. By digestion with alcohol it is separated into two portions; the one soluble in this fluid, and the other insoluble; the former composes about three-fourths of the whole, and is pure resin; the latter, in most of its properties, resembles caoutchouc. The nature of this insoluble portion was first discovered by Kind, an apothecary at Berlin, whose observations have since been confirmed by Mr. Matthews. Mr. Brand, however, has observed that when this insoluble substance is dried, it becomes brittle, in which respect it differs from caoutchouc. From these experiments, and those of Dr. Wollaston, there can be little doubt that it is a peculiar vegetable principle. Mastic is perfectly soluble in sulphuric ether, from which it is precipitated by alcohol in the form of a

white curd. When distilled, either with water or alcohol, according to Dr. Thomson, no volatile oil is obtained from this substance. It should be chosen clear, of a pale yellow colour, and of an agreeable fragrant odour when heated or rubbed.

MEDICAL PROPERTIES AND USES.—Although the principal consumption of mastic is among varnish-makers, it has been long introduced into medicine under the character of an astringent and diuretic in obstinate coughs, dysentery, fluor albus, gleets, hæmoptysis, dyspeptic complaints, and internal ulcerations; but it probably possesses no powers of any kind but what may be ascribed to its moderately stimulant effect upon the organs of secretion. By means of mucilage and syrup, mastic dissolved in alcohol, is rendered miscible with water, and supposed to possess the virtues of turpentine in an inferior degree. The Arabians regard it as astringent and tonic, and Avicenna speaks of its discutient qualities; he moreover says, “Tussi et sanguine rejectione prodest. Stomachum roborat et jecur.”* In pharmacy it is sometimes employed as an adjunct to pills, to render them less immediately soluble in the stomach, and consequently more progressive in their operation. The wood (*Lentisci lignum*) is received into the materia medica of some of the foreign pharmacopœias, and highly extolled in gouty, hæmorrhagic, and dyspeptic affections.† In the arts mastic is much used, in combination with lac, elemi, and other resins, in the composition of varnishes; and the jewellers mix it with turpentine, and ivory black, and place it under the diamond to add to its lustre. Virey, in his “Histoire Naturelle des Medicamens,” informs us, that from the kernels of the mastic-tree an oil may be obtained which is fit for table; and according to Desfontaines and Duhamel the *Pistacia atlantica*, and *P. chia* yield resins which resemble mastic.

DOSE.—The dose may be from gr. x. to ʒʒ. twice a day.

* See *Canon Med.* lib. ii. tract. ii. p. 189.

† See *Ephem. Nat. Cur.* dec. 3. a. 9. 10. obs. 135.



Smilax Sarsaparilla.

W. & A. 1830

Weddell sc.

SMILAX SARSAPARILLA.

*Medicinal Smilax, or Sarsaparilla.**Class XXII. DICECIA.—Order VI. HEXANDRIA.**Nat. Ord. SARMENTACEÆ, Lin. ASPARAGI, Juss.*

GEN. CHAR. Male. *Calyx* six-leaved. *Corolla* none.
 Female. *Calyx* six-leaved, inferior, deciduous.
Corolla none. *Styles* three. *Berry* three celled.
Seeds one, two, or three.

SPEC. CHAR. *Stem* prickly, somewhat quadrangular.
Leaves unarmed, elliptical, pointed, abrupt, three-
 nerved, somewhat glaucous beneath. Common
 flower-stalk longer than the footstalk.

Syn.—*Smilax aspera peruviana, sive Sarsaparilla. Bauh. Pin.* 296.

Smilax peruviana, Sarsaparilla. Ger. Em. 859. 1. *f.*

Smilax viticulo asperis virginiana, folio hedaraceo leni Zarga noblissima. Pluk. Alm. 348. *t.* 111. *f.* 2. *mala; Raii Supl.* 345.

Smilax glauca, ramis subteretibus passim aculeatis, foliis quasi cordato-ovalibus acuminatis, &c. Mich. Amer. 2. *p.* 237.

Smilax Sarsaparilla. Lin. Sp. Pl. 1459; *Willd. v.* 4. *p.* 776; *Woodv.* 3. *t.* 194.

FOREIGN.—*Salsepareille, Fr.; Salsapariglia, It.; Sarsaparillen—Smilax, Ger.*

DR. WOODVILLE, of whose figure and description we have here availed ourselves, says, “ this species of *smilax* is a native of South America, flowering in July and August.” It is a climbing perennial plant, inhabiting the hedges and swamps of Virginia; and probably also of Brasil, Mexico, and Peru. The root has been long known as an article of the *materia medica*; but the roots of more than one species of *smilax* are imported from America under the name of *sarsaparilla*. Of these, Hernandez mentions

four species, the spontaneous produce of the soil, which grow in Mexico or New Spain, viz. *Mecapatli seu Zarsaparilla prima*, *Quauhmecatl seu Zarsaparilla secunda, et tertia*; and *Quauh-mecapatli seu Zarsa quarta*.* According to Baron Humboldt, the best sarsaparilla grows on the borders of a lake on the north of the Cerro Unturan, two days' journey from Esmeralda. The sarsaparilla of this district is celebrated at Grand Para, Angustura, Cumana, Neuva Barcelona, and in other parts of South America, by the name of *Zarza del Rio Negro*. It is esteemed the most active of all that are known, and is much preferred to the *sarza* of the province of Carracas, or of the mountains of Merida; it is dried with great care, and exposed purposely to smoke, in order that it may become blacker. This species of sarsaparilla grows in profusion on the humid declivities of the mountains of Unturan and Achivaquere, where it is collected by the Indians, and brought to the capital. M. Humboldt found twelve new species of smilax in South America, among which the *S. syphilitica* of the Cassiquiare, and the *S. officinalis* of the river Magdalena, are the most esteemed, on account of their medicinal qualities. "The trials made," says this illustrious traveller, "in several botanical gardens of Europe, prove that the *Smilax glauca* of Virginia may be cultivated in the open air, whenever the mean temperature of the winter rises above six or seven degrees of the centigrade thermometer; but those species that possess the most active virtues belong exclusively to the torrid zone, and require a much higher degree of heat." Clusius informs us that Europe received the first sarsaparilla from Jucatan, and the island of Puna, opposite Guayaquil. But the trade in this article is now more active in those parts which have interior communications with the Orinooko, the Rio Negro, and the Amazon.

The root of the officinal smilax is divided into several branches, which are somewhat thicker than a goose-quill, strait, externally brown, internally white, and three or four feet in length; the stems are shrubby, long, slender, climbing by means of tendrils,

* *Rerum Medicarum Nov. Hispan. Thesaur.* p. 288.

like those of our bryony, a little zig-zag, roundish, with about four slight unequal angles, and beset with strong scattered, awl-shaped, hooked prickles. The leaves are elliptical or ovate, and when full grown, nearly orbicular, two inches and a half broad, alternate, abrupt, or contracted at each extremity, with a short terminal point; smooth, of a deep green colour above, somewhat glaucous beneath, and marked with three strong prominent ribs. The footstalks are short, broad, channelled; each furnished with a pair of long tendrils, subsequently deciduous. The flowers are male and female, upon different plants, lateral, and usually stand three or four together on slender axillary racemes, longer than the footstalks. The calyx of the *male* flower is bell-shaped, divided into six segments, which are oblong, spreading, and reflexed at their points: the filaments are six, simple, and bearing oblong anthers. The calyx of the *female* flower is deciduous, and also bell-shaped, similar to that of the male; there is no corolla, unless the calyx be considered as such, which, from analogy to *Asparagus*, it ought to be. the germen is superior, ovate, supporting three minute styles, with oblong, reflexed, downy stigmas. The fruit is a round three-celled berry, the size of a currant, umbilicated, of a red colour, and containing a solitary seed in each cell, one or two of them generally abortive.—Fig. (a) represents the fruit.

The systematic name, *Smilax*, was originally given to the Yew, *Taxus*; but likewise applied by Dioscorides to different plants of a climbing nature. One of these he terms *τραχεια*, *rough*, and as the term *smilax* is still applied to this by modern botanists, De Theis supposes the word to originate from *σμιλη*, a *scraper*. The *σμιλαξ* of Dioscorides, simply so denominated, is stigmatized by him as a most virulent poison; while his *σμιλαξ τραχεια* is celebrated as an antidote so powerful, that if given to a new-born infant he can never be poisoned as long as he lives! The specific name is derived from the Spanish *zarza*, a brier or bush, and *parilla*, a little vine.

The dried root is imported from South America, principally from Brasil, packed in bales. According to Humboldt, nearly 5000 quintals are annually exported from Vera Cruz. It is in

Art. Sarsaparilla.

long, slender twigs, of the thickness of a goose-quill, which, for pharmaceutical purposes, are split and cut in small pieces. It is internally white, with a small woody centre, tough, flexible, and covered with a brownish bark, marked with longitudinal furrows. Three different *varieties* are met with in commerce. 1st. The Honduras, composed of very long roots, often doubled in the bundles. 2d. The red, or bearded, called also, from its channel of importation, Jamaica, but the product of Honduras, distinguished by its colour, and the presence of its radicles. 3d. The Brazilian, or, as it is called, Lisbon, without radicles, which is held in the greatest estimation. There is a spurious or grey sarsaparilla, which resembles very nearly, in its external appearance, that of Brasil. The roots of this species are dotted with purplish spots, and there is not the white woody centre, which all the known sarsaparillas exhibit. This small creeping root is derived from the *Aralia nudicaulis*, Lin.* There is also known in commerce a red sarsaparilla, the root of a plant belonging, according to M. Virey, to the family of the *Asphodeli*; and what is called the spurious red, which is the root of the *Agave cubensis*. The roots of the *Carex arenaria* and *Carex hirta*, are called German sarsaparilla, and used as a substitute.

QUALITIES AND CHEMICAL PROPERTIES.—This root is inodorous, and has a slightly bitterish, not ungrateful taste. Boiling water extracts from it a portion of fecula, in which the virtues of the root appear to reside. The aqueous solution has a brown colour, reddens litmus paper, and affords a precipitate, with infusion of galls. M. Galileo Palotta, an Italian physician, has discovered in this root what he considers its active principle, to which he has given the name of *parigline*.* The process by which it is procured is the following. The sarsaparilla is sliced, or bruised with a pestle, and on a given quantity of the root six times its weight of boiling water is to be poured; the vessel in which this is placed is then covered, and the infusion allowed to continue for eight hours. The fluid is then strained off, and a similar quantity of boiling water is added to the roots, and allowed to remain the same time as the first. The two infusions, when mixed, are of a deep amber colour, slightly bitter, and nauseating. To these mixed infusions lime-water is added, and the whole stirred together with a wooden spatula; the fluid soon changes its colour, becomes brown, and deposits a pulverulent substance, of a greyish colour. This, when collected, is washed with water saturated

* MM. Planche and Virey, *Journal de Pharmacie*, iv. p. 405.

with carbonic acid, and being allowed to dry in the sun, is afterwards reduced to a fine powder. It is then put into a matrass, and boiled in alcohol for about two hours, and filtered. The residue is treated with a fresh quantity of alcohol, and the same method is pursued.

These spirituous solutions are mixed, and the whole put into a glass retort, which is then placed in a sand-bath, and the alcohol distilled off; just as the liquid in the retort is observed to thicken, it is to be immediately poured off into a pan, and allowed to remain undisturbed. In a short time a white pulverulent matter is precipitated, which attaches itself to the sides of the vessel. The supernatant liquor is to be poured off; the vessel is to be placed in a stove heated to about 25° R. When the new precipitate is sufficiently dry, it is to be collected and preserved in a glass jar. The liquid which was poured off being evaporated by a gentle heat, furnishes a solid substance, slightly deliquescent, and of a dark colour, which is the impure parigline. The *characters of parigline* are the following:—it is white, pulverulent, light, unalterable on exposure to atmospheric air, of a bitter austere taste, slightly astringent and nauseating, and of a peculiar odour. All the acids unite with it, forming various salts.

Dr. Palotta made five experiments with this medicine on himself; he began by taking two grains, and gradually increased the quantity to thirteen. From the effects it produced he has drawn the following conclusions:—that it has a sedative, but more particularly a diaphoretic property; that it excites an influence, principally on the lymphatic system, and that it will therefore answer all the indications of the sarsaparilla; that it may be used with great advantage in cases of chronic rheumatism; and in hepatic affections, as well as in those forms of disease, the effects of the syphilitic poison.

Another experimentalist, Professor Folchi, contends, that the active principle of sarsaparilla resides in the medullary part of the root, and has extracted from it a yellowish-white substance, crystallized in acicular prisms, dissolving easily in cold water, nearly insoluble in alcohol, having little taste, and tinging green the syrup of violets. M. Folchi ranks it among the vegetable alkalis, under the name of *smilacine*.†

MEDICAL PROPERTIES AND USES.—Matthiolus, we believe, was the first author who wrote on sarsaparilla as a remedy for syphilis; and the Spaniards were indebted to the Indians for their acquaintance with it. About the year 1563 it was introduced into Europe, as a cure for that disease. It quickly fell into disrepute, and was little employed, till it was brought into notice, during the last century, by Dr. William Hunter. Dr. Cullen allows but eight lines to its history and qualities; and, as he never found it effectual in any disease, he states, that he would not give it a place in the *materia medica*. Cullen has many converts to his opinion of it in the present day; and since it has been ascertained that many forms of venereal disease get well without the employment either of it or of mercury, it is easy to assume, that it is altogether worthless. Its more evident properties

* *Journal de Pharmacie*, x. p. 543.

† *Journ. de Chimie Medicale*, v. i. p. 215.

seem to be those of a mild stimulant and diaphoretic; but, if it be useless as an anti-syphilitic, we are inclined to think that few medical men are really so sceptical of its powers as to neglect its aid, after the disease has made its ravages in their own constitutions. Sir William Fordyce recommended it more particularly as an auxiliary to mercury, and to purify the system after its continued administration. Mr. Pearson (who told us, shortly before his death, that in making the decoction it was never sufficiently boiled, in opposition to the opinions of others) says, "the contagious matter, and the mineral specific, may jointly produce, in certain habits of body, a new series of symptoms, which, strictly speaking, are not venereal: which cannot be cured by mercury, and which are sometimes more to be dreaded than the simple and natural effects of the venereal virus. Some of the most formidable of these appearances may be removed by sarsaparilla, the venereal virus still remaining in the system; and, when the force of the poison has been completely subdued by mercury, the same vegetable is also capable of freeing the patient from what may be called the sequelæ of a mercurial course." Dr. Good says, "I have chiefly found it succeed in chronic cases, when the constitution has been broken down, perhaps, equally beneath a long domination of the disease, and a protracted, and apparently inefficient, mercurial process. In connexion with a milk diet and country air, and with a total abandonment of mercury, I have found it of essential importance, and have seen an incipient hectic fall before a free use of it in a week. Its best form is the old one of the decoction of the woods." A late writer, Mr. Bacot, whose admirable treatise on syphilis we have read with much satisfaction, thinks very highly of sarsaparilla; and at page 278 of his work narrates the case of a man affected with gummata and nodes, (in whom mercury produced colliquative sweats, loss of appetite, and rapid waste of flesh,) attacked by nocturnal pains, so severe, that no language could be too strong to express his sufferings. Opium afforded no relief. A pint of the simple decoction of sarsaparilla was given each day, uninterruptedly, for five weeks, accompanied by no other medicines; and, at the end of that time, all symptoms were removed, excepting a few flying pains. Dr. Good and Mr. Pearson appear to us to have formed a correct estimate of its powers in syphilis, and the majority of medical men coincide with them. Sarsaparilla is used in those affections of the stomach which appear to arise from its own morbid secretions: also in chronic rheumatism, scrofula, gout, elephantiasis, and some other cutaneous diseases. In that irritable state of constitution consequent to severe operations, or to long continued suppuration, we have seen it employed with evident success in Guy's Hospital, under the auspices of Sir A. Cooper. It increases the appetite, brings down the pulse, augments its tone, and, conjoined with milk, is both food and medicine.

OFF. PREP.—Decoctum Sarsaparillæ, L. E. D. Decoct. Sarsaparillæ, comp. D. Extractum Sarsaparillæ, L. Syrupus Sarsaparillæ, L. D.





Cocculus palmatus.

Waidell.

London Published for the Authors May 1830.

G. Reil del.

COCCULUS PALMATUS.

*Palmated Cocculus, or Calumba Plant.**Class XX. DİÆCIA. Order VI. HEXANDRIA.**Nat. Ord. SARMENTACEÆ, Lin. MENISPERMEÆ, Juss.*

GEN. CHAR. *Sepals and petals arranged in a double series, very rarely in a triple series. Stamens 6, free, opposite to the petals. Carpella 3-6. Fruit drupaceous, reniform, rather compressed, 1-seeded. Cotyledons distant.*

SPEC. CHAR. *Leaves cordate, five to seven-lobed; lobes entire, acuminate, somewhat hairy on both sides. Stem and germens clothed with glandular hair.*

Syn.—Menispermum palmatum. Willd. Sp. Pl. 4. p. 825; Lam. Dict. 4. p. 99; Spreng. Syst. Veg. v. 2. p. 154; Berry in Asiat. Res. v. 10. p. 385. t. 5. Cocculus palmatus. Decand. Syst. Veg. v. 1. p. 323; Ejusd. Prodr. v. 1. p. 98. Curt. Bot. Mag. v. iv. N. S. t. 2970—2971.

THERE are few articles of the *materia medica* more generally esteemed than *Calumba* root. It is procured from a plant of the natural order of the *Menispermæ*, and was formerly erroneously supposed to derive its name from *Columbo*, the principal town in the island of *Ceylon*, which was regarded as its native country. Among the *Africans*, its name is *Kalumb*. It is spelt *Kalumbo* by the *Portuguese*, in whose language the *o* is mute, and from this, *Dr. Berry* tells us, the name originated by which this valuable root is known in *Europe*. It is a staple export of the *Portuguese* from *Mosambique*; and when we consider the quantity exported, it is certainly a remarkable circumstance, that its native country should have been so long unknown. It is, however, now ascertained to grow naturally, and in abundance, in the thick forests that are said to cover the shores about *Oïbo* and *Mosambique*, on the east coast of *Africa*, and

inland for about fifteen or twenty miles. For this important discovery we are indebted to M. Fortin, a Frenchman, who, when at Mosambique, and engaged in purchasing the root, as an article of trade, procured an entire offset of a larger size than usual. This he brought with him to Madras, in 1805, and presented it to Dr. Anderson, who justly esteemed it a valuable acquisition to India. This being planted, produced a male plant, from which Dr. Berry's figure and description were made. Still, the female flower and fruit was a desideratum; and for the means of making them known to the readers of Medical Botany, we are indebted to the indefatigable exertions of Dr. Hooker, of Glasgow, who, in the Botanical Magazine, for March, 1830, has published a full description, accompanied by figures representing portions of the Calumba plant, with admirable dissections, executed by Professor Bojer, aided in the colouring by the faithful pencil of Mrs. Charles Telfair, of the Mauritius. The following description from the above work, is translated from the Latin MSS. of Professor Bojer:—

The root is perennial, composed of a number of fasciculated, fusiform, somewhat branched, fleshy, curved, and descending tubers, of the thickness of an infant's arm, clothed with a thin, brown epidermis, marked, towards the upper part especially, with transverse warts; internally they consist of a deep, yellow, scentless, very bitter flesh, filled with numerous parallel, longitudinal fibres or vessels. The stems are annual, herbaceous, one or two proceeding from the same root, about the thickness of the little finger, twining, simple in the male plant, branched in the female, rounded, green; in the full grown plant, below, thickly clothed with succulent longitudinal hairs, which are tipped with a gland. The leaves are alternate, the younger ones thin, pellucid, bright green, generally three-lobed; older ones remote, a span in breadth, nearly orbicular in their circumscription, deeply cordate, five to seven-lobed, the lobes entire, often deflexed, wavy on the surface and margin, dark green above, paler underneath, hairy on both sides, with prominent nerves, and supported on round hairy footstalks, about as long as the leaves. In the *male* plant the racemes are axillary, solitary or

two together, drooping, about as long as the petiole, compound, clothed with glandular hairs, and having at the base small deciduous bracteas. The calyx is smooth, consisting of six ovate, acute, nearly equal leaves, arranged in a double series. The corolla is pale-green, consisting of six oblong, free petals, with involute margins, and recurved apices, arranged round a central orbicular disc or gland, in a single series. The filaments are six, thick, shorter than the petals, with terminal, truncated, four-celled anthers; the cells opening internally, and filled with linear, oblong grains, of yellow pollen. In the *female* plant the racemes are also axillary, solitary, simple, patent, shorter than those of the male. The pedicels are furnished with minute caducous bracteas. The sepals or leaves of the calyx are six, in two series, three inferior, smaller, ovate, acute, subpatent, plane, glabrous. The petals are six, rarely eight, green, glabrous, shorter than the germen, and recurved at the extremity. The pistils are three, free, of which two are generally abortive, ovate, acuminate, glanduloso-pilose, and containing one ovule. The style is very short, and the stigma has several spreading points. The fruit is drupaceous or berried, about the size of a hazel-nut, densely clothed with long, spreading hairs, which at their extremity are tipped with a black gland. The seed is subreniform, clothed with a thin black shell, transversely striated.—Fig. (*a*) exhibits a portion of a male plant, reduced to one-fourth its natural size; (*b*) the male flower; (*c*) stamen and petal; (*d*) the grains of pollen; (*e*) glandular hair; (*f*) female flower; (*g*) pistils—all but fig. *a* more or less *magnified*; (*h*) portion of a female raceme, with perfect fruit; (*i*) seed; (*j*) embryo, *magnified*; (*k*) the root, with a portion of two young stems rather less than the size of nature.

The roots are dug up in the month of March, the dry season, or when the natives are not employed in agriculture. The main stock of the root is not removed, but offsets from the base are taken, and those of sufficient size, yet not so old as to be full of fibres, which render it unfit for commerce. Soon after it is dug up, the root is cut into slices, strung on cords, and hung up to dry in the shade. It is deemed fit for commerce, when, on ex-

posure to the sun, it breaks short; and of a bad quality when it is soft or black.

From the following extract from a Memoir which appears to have been read at a Literary and Scientific Society in the Mauritius, by Mr. Telfair, it appears that the culture of colombaroot has been recently introduced into our colonies, in the East Indies.

“The late Sir Walter Farquhar, Physician to the King,” says Mr. Telfair, “was very anxious to introduce into England the *Colombo root* in a living state; and for that purpose he desired his son, Sir Robert Farquhar, Governor of Mauritius, Bourbon, and their Dependencies, to procure the plant from its native soil in Africa, and forward it to London. Sir Robert lost no time, after assuming his government at the conquest of the French Islands, in applying to the Governor of Mozambique for growing plants; and was repeatedly assured that these should be sent to him at the proper season. These promises, however, were never fulfilled; although renewed by the several succeeding officials of the Portuguese possessions on the east coast of Africa, ever since the year 1811. Dr. Wallich also took much pains for effecting the same object, and sent to Governor Farquhar the drawing made at Calcutta of a male plant of the *Colombo root*, which had been brought to the Botanic Garden there by Mr. Berry. Copies of this drawing were distributed to the different ships of war, and captains of merchant vessels, trading to the eastern coast of Africa, that they might be enabled to distinguish the plant and bring it to the Mauritius; since there had been an evident unwillingness on the part of the Portuguese authorities to permit this precious vegetable to be taken away, in any other state than what it bears in commerce, when deprived of vegetative power by passing through the oven.

“All the attempts resulting from these means proved fruitless; until Captain William Fitzwilliam Owen, commanding the surveying squadron of his Majesty’s navy, on the east African coast, undertook the task. The extensive influence he had acquired by his intercourse with the native chieftains and tribes, enabled him to procure living plants; while his botanical knowledge secured him against the mistakes committed by others, who had been misled by the local settlers in their search, and imposed on by the substitution of other species instead of the true *Colombo root*. Captain Owen, in the year 1825, brought away in his Majesty’s ship *Leven*, from Oïbo, a great number of cases, filled with growing roots of the male and female plants laid down in the sandy loam, which appears to be their favourite soil. No time was lost by him in forwarding a great portion of these to Mr. Telfair, at Mauritius, planting some also at Mahé, in the Seychelles Archipelago, and sending to Bombay several cases, in order to multiply, by dispersion, the chances of success in naturalizing them in different climates.

“ The roots that were brought to Mauritius, were partly transmitted to England, New Holland, and America; but the greater number were distributed among the various districts of Mauritius and Bourbon. Many of these plants blossomed at Mauritius in the course of a year, but the flowers proved all male. The roots, however, had, during that period, multiplied to twenty or thirty times the original quantity, and thus an opportunity was given for distributing them still more extensively. The female plants flowered at Seychelles, and Mr. G. Harrison, the Government Agent there, transmitted some of their roots to Mr. Telfair, in whose garden of Bois Chéri, in the Mauritius, they have flowered, and being fecundated by Professor Bojer, who touched them with the pollen of the male blossom, they bore seeds. From these individuals the drawings by Professor Bojer have been taken, which give a delineation and dissection of every part.”

QUALITIES, AND CHEMICAL PROPERTIES. Calumba root is brought to us in round pieces, about a quarter of an inch thick, and formed by transverse sections of the root. These sections are surrounded by bark, externally of a brown wrinkled appearance; internally yellow. The woody part of the root should be of a light yellow colour, solid and heavy. It is, however, often spongy and worm-eaten. According to analysis by M. Planche, calumba contains a large proportion of starch, and of a peculiar animal substance; a yellow bitter matter, not precipitated by metallic salts; a small quantity of volatile oil, salts of lime and potass, oxide of iron and silex.* It is in the yellow resinous matter that the properties of the plant reside. The infusion of calumba is copiously precipitated by infusion of galls, and yellow cinchona bark, by acetate and superacetate of lead, oxymuriate of mercury and lime water, from which it is inferred that it contains *cinchonin*.

A spurious calumba is met with in France, which is imported from the states of Barbary. It is known by its not containing starch; and is, therefore, easily detected by the agency of iodine, which does not alter its colour; by its turning black with sulphate of iron, disengaging ammonia by the action of caustic potass, and by its infusion reddening turnsole paper. The root of our common red-berried bryony, *Bryonia dioica*, tinged yellow, with tincture of calumba, is sometimes sold as a fraudulent sub-

* *Bull. de Pharm.* iii. 289.

stitute ; and the root of an American plant, *Fraseria Walteri* of Michaux, *Swartzia Fraseri* of Smith, is imported into Liverpool, and dispersed over the north of Europe as the true calumba root. It may be distinguished from the true calumba, by its whiter colour, lighter texture, the admixture of longitudinal pieces, and especially by its taste, which is sweetish at first, and much less bitter than the real calumba.* The tincture of the spurious root gives no precipitate with infusion of galls.†

MEDICAL PROPERTIES AND USES.—Calumba is a powerful antiseptic and tonic, and is free from that nauseous taste which distinguishes many other bitters. It is employed with great advantage in those affections of the stomach and bowels which are attended with an increased formation of vitiated bile, and is often found to check the vomiting in cholera. The vomiting which is so distressing to many females during the first months of pregnancy is also frequently removed by it ; and it is one of our most useful and grateful stomachics. By some it is much commended for the diarrhœa and vomiting which are caused by dentition, and Denman recommends it particularly, as preferable to cinchona for the low stage of puerperal fever. In the last stages of phthisis pulmonalis, and in hectic fever, it has been found to check colloquitive diarrhœa, to allay irritability, and to impart some degree of vigour to the stomach. It is usually given in the form of infusion, which will not bear to be kept long. It may be combined with aromatics, orange-peel, alkalies, and neutral salts. Sometimes the root is chewed ; and the powder, combined with soda, we have found serviceable in pyrosis, in chronic dysentery attended with ulceration of the colon, and some other painful affections of the stomach and bowels.

The dose of the powder is from ten to thirty grains, three times a day.

OFF. PREP.—*Tinctura calumbæ.* L. E. D.

Infusum calumbæ. L. E.

* See Bigelow's *Treatise on the Materia*, 8vo. Boston, 1822. p. 141.

† Stolze. *Berlinisches Jahrbuch für die Pharmacie*, 1820. p. 481.



Mercurialis perennis.

London: Published by J. G. Smith, 1828.

MERCURIALIS PERENNIS.

*Perennial, or Dog's Mercury..**Class XXII. DIÆCIA.—Order VIII. ENNEANDRIA.**Nat. Ord. TRICOCCÆ, Lin. EUPHORBIÆ, Juss.*

GEN. CHAR. Barren fl. *Calyx* 3-parted. *Corolla* 0.
Stamens 9—12. *Anthers* globose, 2-celled.
 Fertile fl. *Calyx* 3-parted. *Corolla* 0. *Styles* 2.
Capsules 2-celled, 2-lobed. *Seeds* solitary.

SPEC. CHAR. *Stem* perfectly simple. *Leaves* rough.
Root creeping, perennial.

Syn.—*Mercurialis perennis repens*, cynocrambe dicta, *Raii. Syn.* 138.

Cynocrambe, *Ger. Em.* 333. *f.*; *Fuchs. Hist.* 444. *Ic.* 250. *f.*; *Matth. Valgr.* v. 2. 635. *f.*

Cynocrambe mas et fæmina, *Camer. Epit.* 998.; *Bauh. Hist.* v. 2. 979. *f.*

Mercurialis, n. 1601. *Hall. Hist.* v. 2. 277.

Mercurialis perennis, *Lin. Sp. Pl.*; *Willd.* v. 4. 809; *Fl. Brit.* 1083;
Eng. Bot. v. 26. t. 1872; *Hook. Scot.* 289; *Curt. Lond. fasc.* 2. t. 65;
Fl. Dan. t. 400; *Bull. Fr.* t. 303.

FOREIGN.—*Mercuriale sauvage, ou de montagne*; *Choude Chien*, Fr.; *Mercorella montana*, It.; *Kerza perunna*, Sp.; *Das perennirende oder beständidge Bingelkraut*, *Wildes Bingelkraut*, Ger.; *Vild: bingelurt*, Dan.; *Bingelgras*, Swed.; *Proleska*, Russ.

Two species of this genus are indigénous to Britain, viz. the perennial or Dog's Mercury, (*Mercurialis perennis*,) and the annual or French Mercury, (*Mercurialis annua*). The former has obtained a place in our work on account of its poisonous qualities, and the latter was at one time in considerable repute as

an article of the materia medica. Dog's Mercury is a common plant, growing everywhere in shady groves and hedges ; flowering in April and May.

The root is creeping, white, and very fibrous. The stem is erect, perfectly simple, round, leafy, naked below, thickest at the joints, slightly winged alternately, and rises to the height of a foot or more. The leaves stand in opposite pairs, on short foot-stalks ; they are ovate, acute, serrated, two or three inches long, with two small, pointed stipulas, at the base of the foot-stalks. The flowers proceed in slender, erect spikes, from the axillæ of the leaves, near the top of the stem ; in the barren, or male plant, longer than the leaves ; in the female, concealed among them. The flowers in the fertile plant are few ; in the barren ones numerous, sessile, growing in a short, interrupted spike, and half surrounding the stem. The barren flowers have from nine to twelve capillary, erect stamens, bearing globular, two-lobed anthers : there is no corolla ; and the calyx, in both, is divided into three deep, ovate, concave, spreading segments. The germen is superior, roundish, compressed, with a furrow at each side, supporting two spreading, inflexed, tapering, rough styles, having acute stigmas. Two awl-shaped bodies, found occasionally at the opposite side of the germen, and rising above the styles, are supposed to be the nectaries. The seed-vessel is a two-lobed, globular capsule, two-celled, and containing a single, roundish seed in each cell, of a brownish, purple colour. Fig. (*a*) represents the calyx ; (*b*) a single fertile flower ; (*c*) the capsule and seeds ; (*d*) the stamens, with their anthers, and the calyx.

The male and female flowers are seldom found intermixed, each sex usually growing in large patches ; whence it has been inferred, that this plant increases principally by the root, rarely producing perfect seeds.

QUALITIES.—The whole herb has a very nauseous taste, and a heavy, disagreeable odour. When dried, the leaves often assume a bluish tint, indicating its affinity, as a distinguished writer in Rees' Cyclopedia has well remarked, to *Croton tinctorium*. Notwithstanding its strong, unpleasant flavour, Dog's Mercury has

been eaten boiled as a pot-herb, when mixed with mucilaginous and oily substances ; yet instances are not wanting of the fatal consequences of its use occasionally in this country. The following case, where it was mistaken for common English Mercury, (*Che-nopodium Bonus Henricus*,) and had nearly proved fatal to a whole family, is recorded by Sir Hans Sloane, in the 3d edition of Ray's Synopsis :—

“ W. Matthews, his wife, and three children, have been lately very ill, and like to die ; the occasion and manner of their sickness was very odd, and therefore I shall give you a particular account of both. About three weeks ago, the woman went into the fields and gathered some herbs, and, having first boiled them, fried them with bacon for her own and her family's supper. After they had been about two hours in bed, one of the children (which is dumb, and about seven years old) fell very sick, and so did the other two presently after ; which obliged the man and his wife to rise and take the children to the fire, where they vomited and purged, and within half an hour fell fast asleep. They took the children to bed as they were asleep, and they themselves went to bed too, and fell faster asleep too than they had ever done before. The man waked next morning about three hours after his usual time, went to his labour at Mr. Newport's, and so by the strength of his constitution carried it off ; but he says he thought his chin had been all day in a fire, and was forced to keep his hat full of water by him all day long, and frequently dipt his chin in it as he was at work. The woman awoke awhile after her husband, and, being forced to it, got up to look after her little family concerns ; but she was very sick, and has continued so till within these few days, since she is very well recovered. One of their children slept from that night, (which was Thursday three weeks,) till Monday evening following, and then (having just only opened her eyes, and made two sprunts,* without speaking one word,) died immediately while she was asleep ; endeavours were used to awaken her, but in vain. The other two children slept about

* To Sprunt, v. n. (*sprengen*, Teut,) to spring up; to germinate, to spring forward.

twenty-four hours, and, upon their wakening, fell a vomiting and purging again, which I think saved their lives. By Mr. Newport's and my directions, they sent some of the same herb to the doctors and apothecaries in Salop, who generally say it is Dog Mercury; but some say, it is a sort of Night-shade: whatever it be, it is certainly poisonous, and it is observed that cattle never browse upon it: but I guess it to be a mistake..... I am no herbarist, but this I observed of the herb; it is branched and seeded something like spinage, or mercury, but leaved like lakeweed."—(*Philos. Trans.*, No. 203, for September, 1693.) Sir H. Sloane was afterwards furnished with some specimens of the plant, and found them to be Dog's Mercury.

TREATMENT.—The remedies to be applied in case of poisoning by this plant, will be the same as those recommended under the article *Nicotiana Tabacum*.

MERCURIALIS ANNUA.

Annual, or as it is sometimes called, French Mercury, with branched stems, and smooth, glossy leaves, grows wild in waste or cultivated ground, chiefly in the more temperate parts of Europe. It occurs frequently near London, in Battersea fields; and is figured in "*English Botany*," v. 8. t. 559. It may be at once distinguished from *M. perennis* by its annual root, branched stem, and smooth leaves, and by its flowering in Autumn. This plant is mucilaginous, and was formerly much employed in enemas and emollient fomentations. It is sometimes eaten as spinach, and when used in considerable quantities, it operates as a cathartic. A syrup made from the leaves, given in the dose of two ounces, is said to prove a mild and useful laxative. According to Lamarck, the seeds are very fattening to those small birds, which the Italians call *Beccaficos*, or *Fig-eaters*, and which are so much relished by the epicures of the south of Europe.



Juniperus communis.

G. R. D. Del.

W. D. Sc.

JUNIPERUS COMMUNIS.

*Common Juniper.**Class XXII. DIÆCIA.—Order XII. MONADELPHIA.**Nat. Ord. CONIFERÆ, Lin. 51. Juss. 100.*

GEN. CHAR. Male. *Catkin* conical. *Calyx* a scale.
Corolla none. *Stamens* 3. Female. *Calyx* 3-parted.
Petals 3. *Styles* 3. *Berry* pulpy, 3. seeded.

SPEC. CHAR. *Leaves* acicular, 3 in each whorl, spreading.
Stem erect.

Syn.—*Juniperus vulgaris*, baccis parvis purpureis. *Raii. Syn.* 441; *Bauh. Hist.*
v. 1. p. 2. 293. f.

Juniperus vulgaris fruticosa. *Bauh. Pin.* 488.

Juniperus. *Ger. Em.* 1372. *f.*; *Camer. Epit.* 53. *f.*; *Matth. Valgr. v. 1.*
109. f.; *Hall. Hist. v. 2. 319.*

Juniperus communis. *Lin. Sp. Pl.* 1470; *α, Willd. v. 4. 853; Fl. Brit.*
1085; Eng. Bot. v. 16. t. 1100; Hook. Scot. 290; Woodv. t. 95; Pall. Fl.
Ross. v. 1. t. 4.

FOREIGN.—*Genevrier ordinaire*, Fr.; *Ginepro*, Ital.; *Embro*, Sp.; *Gemeiner*
Wacholder, Ger.

THE Common Juniper is an indigenous, evergreen shrub, growing on heaths and chalky hills, and flowering early in May. It is extremely abundant on Banstead downs, between Croydon and Epsom; and the specimen from which our figure was designed grew on a chalky bank, by the side of the road leading from Dartford to Darenth wood, in Kent.

It is a bushy plant, extremely variable in size, smooth, more or less erect, with very numerous, rigid, subdivided, leafy, quadrangular branches. The leaves are very numerous, three in each whorl, linear, entire, sharply pointed; channelled, and glaucous on the upper surface; convex, keeled and of a dark green colour beneath. The *male* and *female* flowers are on different plants. The catkins are axillary, sessile, conical, solitary, and furnished with three rows of whorled, imbricated, oval scales, three in each whorl, with a terminal one: the *male* flowers are of a yellowish colour at first, afterwards brown, and discharge a

copious cloud of yellow pollen. The filaments, which are found in the terminal florets only, are three, awl-shaped, united at the base, and bearing roundish anthers; in the lateral florets the anthers adhere to the base of the scale. In the *female* flowers the calyx is divided into three minute, permanent segments, united with the germen. The petals are green, rigid, acute, and also permanent. The germen is inferior, roundish, with three very short styles, and simple stigmas. The fruit is a nearly globular berry, of a bluish black colour, marked with the vestiges of the calyx and petals, having imbedded in its pulp, three angular, bony seeds.—Fig. (a) represents a catkin, magnified; (b) a scale with the anthers; (c) a female flower; (d) section of a berry, exhibiting the oily vesicles and seeds; (e) a seed.

QUALITIES AND CHEMICAL PROPERTIES.—The leaves of Juniper are balsamic and agreeable; to the taste resinous and somewhat bitter. The berries have a very agreeable odour; are soft, warm, and bitterish. They contain sugar, mucilage, a small quantity of light essential oil, of a white or yellow colour, possessing the flavour of the juniper, and a strong smell. A writer in the *Jour. Pharm.* 1827, p. 215, asserts that the berries contain an essential oil before their maturity, turpentine when ripe, and a resin when dry on the tree. Most of those which are used in this country are brought from Holland and Italy; and they should be chosen fresh, not much shrivelled, and free from mouldiness. The Italian are said to be the best. Gum Sandarach, or Vernix, as it is sometimes called, is an exudation from the *J. communis* growing in warm climates; though that which is generally met with in commerce is the produce of the *Thuja articulata*, or jointed Arbor-vitæ.* It is commonly used as *pounce*.

MEDICAL PROPERTIES AND USES.—Juniper berries are carminative and diuretic, and given in the form of infusion, combined with other medicines of the same properties, will often be found to act freely on the kidneys. This virtue of the berries depends on their essential oil; and as the tops of the plant also contains it, they are sometimes used. The wood is considered to be sudorific, and has been occasionally substituted for guaiacum

* Desf. *Fl. Atlas II.* p. 333. t. 252.

and sassafras. The usual dose of an infusion made with three ounces of the berries to a pint of boiling water, is a teacupful every four or five hours, to which may be added suitable quantities of extract of dandelion, or cream of tartar, digitalis, squills, &c.

Linneus states in his “*Flora Lapponica*,” that a decoction of juniper berries, when fermented, is used in Sweden as common drink ; but the assertion of some writers, that it is substituted for tea and coffee, he contradicts.

OFF. PREP.—*Oleum Juniperi*. L. E. D.

Spiritus Juniperi compositus. L. E. D.

JUNIPERUS SABINA.—*Savin*.

SPEC. CHAR. *Leaves* opposite, blunt, glandular in the middle, imbricated in 4 ways, the younger acute. *Stem* shrubby.

Syn.—*Sabina*. *Dod. Pempt.* 854; *Blackw. t.* 214.

Sabina folio cupressi. *Bauh. Pin.* 487; *Raii Hist.* 1415; *Duham. Arbr.* 2. t. 62.

Juniperus Sabina. *Lin. Sp. Pl.* 1472; *Willd. v.* 4. 852; *Gouan. Hort.*

Monosp. 510; *Scop. Carn.* 1228; *Ait. Kew. v.* 5. p. 414; *Woodv. t.* 259.

FOREIGN.—*Sabinne*, Fr.; *Sabina*, It. and Sp.; *Stinkender Wacholder*, Ger.

SAVIN is a native of the south of Europe and the Levant ; it is, however, a hardy shrub, and was cultivated here by Turner in 1562, and probably much earlier. The flowers resemble those of the preceding species, and appear in May and June.

It is commonly of humble growth, but sometimes forms a handsome dark evergreen bush, three or four feet high, with a trunk a foot in diameter. It is covered with a reddish-brown bark, and sends off many branches, which are numerous subdivided. The leaves are very small, numerous, erect, opposite, pointed, of a bright green colour, and wholly invest the younger branches, which terminate in sharp points. The *male* catkin is conical, and consists of three opposite florets placed in a triple row, and a terminal one at the end ; and at the base of each flower is a broad oval scale, fixed laterally to a columnar pedicel. There is no corolla. The filaments in the terminal flower are three, awl-shaped, and united at the base, with roundish anthers ;

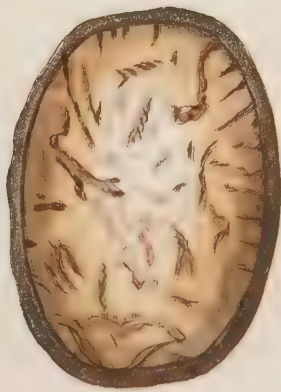
but in the lateral flowers the filaments are scarcely distinguishable, and the anthers are sessile. In the *female* flower the calyx is composed of three minute scales, united with the germen: the petals are three, rigid, acute, and permanent; and the germen supports three styles with simple stigmas. The fruit is a roundish, fleshy berry, of a blackish purple colour, marked with tubercles, and containing three small, irregular-shaped, hard seeds.

QUALITIES.—The leaves and tops of savin have a foetid and oppressive odour, and a hot, bitter, and acrid taste. They give out a great part of their active matter to watery liquors, and the whole to rectified spirit; tinging the former of a brownish, and the latter of a dark green colour. Distilled with water they yield a large quantity of essential oil, on which the activity of the plant depends.

MEDICAL PROPERTIES AND USES.—Savin is a powerful stimulant, and was once much employed as an emmenagogue. A strong decoction and the powder have often been given in large doses, with a view to procure abortion; but if it be capable of producing such an effect, which is very doubtful, it is when it acts as a hydragogue purgative. Externally, the powder is occasionally used to destroy warts and other excrescences; and although much of the acrimony of the plant is destroyed by drying, and by the heat employed in boiling the fresh tops, to compose the ointment of the shops, enough is still retained to render it an efficacious application to blistered surfaces, when it is desirable to keep up a discharge; whether the salve be made as directed by the London and Dublin Colleges, or by combining a portion of the powder with lard. Under its operation, the discharge assumes a puriform character, and so concretes on the surface, as to require to be removed, from time to time, to admit the full action of the application. Of the powder the dose is ℥j to ʒj. In America, the *Juniperus virginiana*, or Red Cedar, which can scarcely be distinguished by experienced botanists from savin, produces precisely the same effects, and is used in the same manner.

OFF. PREP.—Ceratum Sabinæ. L. E. D. Extract: Sabinæ. D. Ol. Sabinæ. E. D.





schata.

MYRISTICA MOSCHATA.

Aromatic, or True Nutmeg Tree.

Class XXII. DIOECIA.—Order XII. MONADELPHIA.

Nat. Ord. LAURI, Juss. MYRITICEÆ, Brown.

GEN. CHAR. Male. *Calyx* 0. *Corolla* bell-shaped, 3-cleft. *Filaments* united in a columnar tube. *Anthers* 6 or 10 cohering.

Female. *Calyx* 0. *Corolla* bell-shaped, 3-cleft, deciduous. *Style* 0. *Stigmas* 2. *Seed* solitary, inclosed in a coriaceous many-cleft tunic (Mace).

SPEC. CHAR. *Leaves* elliptic-oblong, smooth, pointed, paler beneath, with simple parallel nerves. *Perianth* of one leaf, coriaceous, urceolate. *Peduncles* with few flowers.

Syn.—*Nux moschata*, fructu rotundo, *Bauh. Pin.* 407; *Pluk. Phyt. t.* 219;

Nux Myristica seu *Pala*, *Rumph. Herb. Amb. v.* 2. *p.* 14. *t.* 4.

Myristica aromatica, *Lam. Act. Par.* 1788. *p.* 155. *t.* 5—7; *Lam. Dict. v.* 4. *p.* 385; *Lam. Ill. t.* 382; *Roxb. Pl. of Corom. v.* 3. *t.* 267.

Myristica officinalis, *Lin. Suppl. p.* 265; *Gært. de Fruct. v.* 1. *p.* 194. *t.* 41. *f.* 1; *Hook. Exot. Fl. t.* 155, 156; *Bot. Mag. N. S. v.* 1. *t.* 2756—2757.

Myristica moschata, *Willd. Sp. Pl. v.* 4. *p.* 869; *Spreng. Syst. Veg. v.* 3. *p.* 64; *Thunb. in Act. Holm.* 1782. *p.* 45; *Woodv. t.* 134.

FOREIGN.—*Le muscadier*; *Noix muscade*, Fr.; *Moscada*; *Nuez moscada*, Sp.; *Moscadeira*; *Noz moscada*, Port.; *Muskatnuss*, Ger.; *Muskot-trad.*; *Juêphal*, Hind.; *Jatiphalo*, Sans.; *Pela*, Malay.—Of the MACE. *Macis*, Fr. It.; *Macias*, Sp.; *Moshat blumen*, Ger.; *Jawatri*, Hind.; *Jatipatri*, Sans.; *Benga Pela*, Malay.

THE Nutmeg, called *Nux myristica*, or balsam nut, by the old writers, from the Greek *μυριστικός*, *balsamica*, is a dioecious tree, a native of the Moluccas, or Spice Islands; but is principally confined to that groupe denominated the islands of Banda, lying in

lat. 4° 30' south, where it bears blossoms and fruit all the year. The islands comprehended under this general name are Banda or Lantor, Neira, Pulo Ay or Way, Pulorohn, Pulo-pisang, Ros-singen, Pulo-prampon, Pulo-suanjee, Capal, and Gonong or Guenanape, the last being a volcanic islet rising two thousand feet above the level of the sea. They are all small, Banda proper or Lantor, one of the largest being only about eight miles long, and not more than three broad. The soil of all these islands, except that of Gonong, which is for the most part lava, is an exceedingly rich black mould, which renders them fertile in tropical fruits; but their chief and well-known production is nutmegs, for the cultivation of which Neira, Lantor, Pulo Ay, and Pulorohn are laid out in parks or plantations.

This tree is compared by Rumphius to a common pear-tree with respect to size and appearance; it is said to bear fruit at ten years growth, which improves in quality, and increases in quantity, until the tree has attained the age of an hundred years. The trunk rises to the height of twenty or twenty-five feet, clothed with a greyish-brown and tolerably smooth bark, abounding in a yellow juice, and bearing many whorls of spreading branches. The leaves, which stand alternately on short petioles, are from three to six inches long, subbifarious, oblong, glabrous, pointed, rather obtuse at the base, undulated, entire, of a dark green colour, and somewhat glossy above, beneath much paler, but neither pulverent nor downy; with simple, parallel nerves, a little branched at the extremities towards the margin, prominent, and of a brownish colour beneath. When bruised, the leaves are slightly aromatic. The flowers are present at the same time with the fruit, in axillary, subumbellate racemes, and are supported on smooth, subclavate foot-stalks, each pedicel or flower-stalk having a quickly deciduous bractea at the summit. The *male* flowers are from three to five or more on a peduncle. There is no calyx. The corolla or perianth is single, urceolate, and not inaptly compared by Rumphius to the flower of the *Lily of the Valley*, which it resembles in size and form; it is of a thick fleshy texture, clothed with a very indistinct pubescence, of a dingy pale yellowish colour, and cut into three, rarely into

four erecto-patent teeth at the extremity. The filaments are united into a whitish cylindrical column, rounded at the top, and having the upper half covered by about 11 longitudinal, linear-oblong, 2-celled anthers, free at their base, opening longitudinally, and charged with a yellow pollen. The *female* flowers are scarcely recognizable, at first sight, from the male, except that the pedicel is very frequently solitary, on the peduncle. The pistil is solitary, shorter than the corolla, broadly ovate, a little tapering upwards, into a short style, and bearing a 2-lobed persistent stigma. “As the germen swells the perianth falls away; the former then becomes obovate, and from its weight pendent, constituting nearly a spherical drupe, of the size and somewhat of the shape of a small pear. The flesh, which abounds in an astringent juice, is of a yellowish colour, and almost white within, four or five lines in thickness; this opens into two nearly equal longitudinal valves, and presents to view the *nut*, surrounded by its arillus or *mace*, which soon drops out, and the arillus withers: arillus thick, between horny and fleshy, much lacinated, folded and anastomosing towards the extremity, enveloping the nut almost entirely, and so lightly as to form inequalities on its surface. The colour when fresh is a brilliant scarlet. When dry it becomes much more horny, of a yellow-brown, and very brittle. Nut broadly ovate or oval, the shell very hard, rugged, dark-brown, glossy, about half a line thick, pale and smooth within. This immediately envelopes the seed (the nutmeg as sold in our shops) which is of an oval or elliptical form, pale brown, quite smooth, when first deprived of its shell, but soon becoming shrivelled, so as to have irregular, vertical lines or furrows on its surface. Its outside very thin; its inner substance or albumen is firm, but fleshy, whitish, but so traversed with red-brown veins which abound in oil, as to appear beautifully marbled. Near the base of the albumen, and imbedded in its substance, is situated the *embryo*, which is large, fleshy, yellowish white, rounded below, where is the radicle, its *cotyledons* of two, large, somewhat foliaceous, plicate lobes, in the centre of which is seen the plumule.” The figure here given represents a MALE plant of the *Myristica moschata*, the natural size.—

Fig. (a) male flower cut open to show the column of stamens; (b) anther, copied from Roxburgh; (c) female flower cut open to show the pistil; (d) young fruit; (e) ripe fruit in the act of bursting; (f) section of a fully formed fruit, showing the nut included in the mace, *natural size*; (g) the mace from which the nut has been removed; (h) the nut; (i) the seed or nutmeg; (j) nut cut through vertically, showing the albumen and the embryo imbedded in the base of it; (k and l) the embryo—only the two last magnified.

According to Dr. Ainslie, the nutmeg-tree has of late years been cultivated at Batavia, Sumatra, and Pennang. An inferior and long-shaped kind of nutmeg is common in the island of Borneo, and there is a wild sort (*cat jadicai*) frequently to be met with in the woods of southern India, especially in Canara, which Dr. Buchanan thinks might be greatly improved by cultivation. The true nutmeg-tree now grows to a considerable size in certain sheltered situations in the Tinivelly district, especially at Courtalun, and bears pretty good fruit; it is also said to grow in the island of Ceylon, where it has obtained the Cingalese name of *sadikka*. Three other species of *myristica* are also said to grow in that country. Mr. Crawford, in his *History of the Indian Archipelago*, informs us that there are no less than eight cultivated varieties of this tree in the Indian islands; and M. de Comyn states that two sorts grow in the Phillippine islands, one shaped like a pigeon's egg, the other perfectly spherical.

The nutmeg has been supposed to be the *κώμακον* of Theophrastus, but there seems little foundation for this opinion; nor can it with more probability be thought to be the *χρικοβαλανος* of Galen. Our first knowledge of the nutmeg, as well as the clove, was evidently derived from the Arabians, long before the East India Islands were discovered by the Portuguese. By Avicenna, who flourished about the year 1160, it was called *Jiansiban* or *Jansiban*, which signifies *Nut of Banda*. Rumphius who both figured and described this tree, says it was called by the Arabians *Giauzbaut*, *Jauzialbaud* and *Gjauz Bawa*, which means *Aromatic Nuts*. The figure given by Rumphius is, however, so imperfect, and the description so confused,

that Linneus, who gave it the generic name *Myristica*, was unable to assign its proper characters. Sonnerat's account of the *muscadier* is still more erroneous, and nothing was known of the plant that produced this precious fruit, till M. Ceré, director of the Royal Gardens, in the Isle of France, communicated specimens and observations to the Chevalier de Lamarck. For our beautiful drawing and description, we are indebted to Samuel Curtis, Esq. proprietor of the Botanical Magazine; the former of which was executed by the Rev. L. Guilding, who has supplied Dr. Hooker with many other of the figures that have embellished the new series of that valuable work.

In 1602, the Dutch having subjected the original inhabitants, were the first European occupiers of the Banda isles. In 1609, they entered into a treaty with the Oraucais or natives, who bound themselves to send all their nutmegs and mace to the Dutch fort of Nassau, in the island of Nera, at a fixed price, while the Dutch pledged themselves to defend the natives, particularly against the Portuguese. The breach of this agreement by the natives, and the murder of the Dutch commissary, occasioned hostilities between the two powers. In 1616, a similar treaty was entered into with the English, who were then at war with the Dutch; but this also was broken by the inhabitants of Banda. The English having refused, after they had made peace with the Dutch, to join them in the reduction of the Banda isles, the latter attacked them in 1621, and compelled the natives to deliver up their towns, their forts, their arms, and all their islands. In order to secure to themselves the nutmegs and mace which these islands produced, the Dutch erected forts in all the islands, and divided the soil into orchards, which they distributed among the Dutch colonists in proportion to the number of their slaves. The Banda isles were taken from the Dutch by the English Admiral Ranier in 1796, and in 1801 were restored to them by the treaty of Amiens.

The chief settlement of the Dutch is in the island of Nera, which has an excellent harbour, commanded by the cannon of the forts Belgica and Nassau. The island of Banda, which is about eight miles long, and five broad, contains twenty-five nut-

meg fields, which produce annually 570,000 pounds of nutmegs, and 140,000 pounds of mace, called the flower of nutmeg. The hurricane of 1778, however, nearly annihilated the nutmeg trees of this island. These nutmeg fields occupy about 70,000 square toises. In all the other islands nutmegs are also produced in more or less abundance, and even flourish amidst the lava of Gonong.

The real quantity of these valuable spices produced in the Banda isles, has been stated as follows:—In the year 1796, the annual produce was 163,000 pounds of nutmeg, and 46,000 pounds of mace. Between the years 1796 and 1798, the English East India Company imported 817,312 pounds of cloves, 93,732 pounds of nutmegs, and 46,730 pounds of mace, and about a third part more in private trade. In the year 1737, the Dutch East India Company sold at one time 280,964 pounds of nutmeg. In 1756, 241,427 pounds were sold; and in 1778, 264,189 pounds. The average has been considered to be about 250,000 pounds annually, which was sold in Europe at seventy-five livres per pound, exclusive of 100,000 pounds sold in the Indies. The average quantity of mace has been 90,000 pounds annually, and 10,000 in the East Indies.

“ The Dutch having possession of the Spice Islands in 1619, encouraged, to the utmost of their power, the cultivation of the nutmeg in a few of them, and were anxious, for the sake of the monopoly, to have them there so exclusively, that they either destroyed them themselves, in the remainder of the isles, or kept their princes in their pay for the purpose of doing so. In fact, they pursued the same line of policy with the nutmeg, as has been already described with regard to the clove, under that article (tab. 2749, 2759.) They have, more than once, suffered dearly for their insatiable avarice: for the dreadful hurricanes and earthquakes, which spared other islands, nearly annihilated the nutmegs of Banda in 1778; so that the Dutch were only able to have a few supplies for several years afterwards. While the Dutch remained undisputed possessors of the Spice Islands, the quantity of nutmegs and mace exported from their nutmeg-grounds, circumscribed as they were, was truly enormous. Stavorinus, in his valuable ‘ Voyage to the East Indies,’ gives an excellent account of the commercial history of this spice. A quantity, estimated at no less than 250,000 pounds annually, used to be vended in Europe, and nearly half that amount in the East Indies. Of *mace*, the average has been 90,000 pounds sold in Europe, and 10,000 pounds in the East Indies. When the Spice Islands were taken by the British, in 1796, the importations of the East India Company into England alone, in the two years following the capture, were, of nutmegs,

129,732 pounds, and of mace, 286,000 pounds. When the crops of spice have been superabundant, and the price likely, in consequence, to be reduced, the same contracted spirit has actuated the Dutch to *destroy* immense quantities of the fruit, rather than suffer the markets to be lowered. A Hollander, who had returned from the Spice Islands, informed Sir William Temple, that, at one time, he saw three piles of nutmegs burnt, each of which was more than a church of ordinary dimensions could hold. In 1760, M. Beaumaré witnessed, at Amsterdam, near the Admiralty, the destruction by fire of a mass of spice, which was valued at one million of livres, and an equal quantity was condemned to be burnt on the day following: and Mr. Wilcocks, the translator of Stavorinus's Travels, relates, that he himself beheld such a conflagration of cloves, nutmegs, and cinnamon, upon the little island of Newland, near Middleburgh, in Zeeland, as perfumed the air with their aromatic scent for many miles round.

“ M. Poivre has the honour of introducing this valuable plant into the isles of France and Bourbon, in 1772, together with the clove; thence, by the liberal policy of the French, it was sent to Guiana and to the West-India Islands.

“ In 1796 the British took possession of the Molucca Isles, and two years afterwards planted the nutmeg at Bencoolen, in Sumatra, where it is grown in the greatest luxuriance; so that in five years, the trees had arrived from ten to fourteen feet in height, and in October and November 1802, two hundred and forty seven trees, out of about six hundred, blossomed. About half of these were male and the rest female. A second importation was made to that island by the assistance of the Bengal government; and the son of Dr. Roxburgh arrived there with twenty-two thousand nutmeg plants from Amboyna, which, in a few years, yielded 200,000 pounds weight of nutmegs, and 50,000 pounds of mace.

“ In the Moluccas, the Dutch appear to have been totally ignorant of the diœcious nature of the trees, and of the cause of sterility in so many of them. Where the trees are very abundant, this is a matter of comparatively trifling importance: but in colonies where but few plants have been introduced, it is not only of essential consequence that the female flowers should be fertilized by the male, but that the male plants should be employed in the most economical manner. This has been achieved by M. Joseph Hubert, in the Isle of France, in the most successful manner. Ascertaining that one male plant is sufficient for a hundred females, he resolved upon grafting the seedling stock of all his plantations in that proportion, in the second year of their growth: by this means there are no superfluous trees, and they come into bearing the sooner. According to the old method, the trees did not bear flowers till the seventh or eighth year; and it was not till that period, that the useless trees could be removed.

“ In our West-Indian colonies, the nutmeg was introduced about thirty years ago; and first, to the island of St. Vincent, from Cayenne, though not without great difficulty, on account of the extreme jealousy of the inhabitants of that colony, the two countries being then at war with each other. The three trees which were originally imported, have borne fruit for many years, and have attained the height of

twenty feet, with a trunk eight or nine inches in diameter. It does not, however, appear that the culture of the nutmeg succeeds so well in the West, as in the East Indies. Mr. Lockhart, who has the charge of the plants introduced into the island of Trinidad, by his excellency Sir Ralph Woodford, observes, in a letter to me, that the plants flourish best in the rainy season; even when moderate showers fall requiring constantly artificial watering; although a soil saturated with moisture is injurious. For a long time, though the trees introduced into St. Vincent produced abundance of flowers, they bore small crops of fruit, until Mr. Guilding recommended the same process as is employed with the caprification of the fig, when the crops were much more productive, two trees at one period bearing three hundred ripe fruits. The process of grafting adopted in the Mauritius might be employed, perhaps, to still greater advantage. Female flowers, which had reached perfection on the 20th of June, became ripe fruit from the 6th to the 12th of February following; this is the case, at least, in the island of St. Vincent, according to Mr. Guilding, who further observes, that the trees are almost always in flower; that fruit is most abundant in April, May, and June; and that the seed vegetates at the expiration of six weeks from the period of its being put in the ground.

“ In the East Indies, as I have already observed, the trees are almost *always* loaded with flowers and fruit. In the Moluccas, the gathering of the fruit takes place at three periods of the year; in July and August, when the nutmegs are most abundant, but the mace is thinner than in the smaller fruits, which are gathered during November, the second time of collecting: the third harvest takes place in the month of March, or beginning of April, when the nuts, as well as the mace, are in the greatest perfection, their number being then not so great, and the season being dry. The outer pulpy coat is removed, and afterwards the *mace*, with a knife. The *nuts* are placed over a slow fire, when the shell becomes very brittle, and the *seeds* or *nutmegs* drop out: these are then soaked in sea-water, and impregnated with lime, a process which answers the double purpose of securing the seeds from the attack of insects and of destroying their vegetating property. It further prevents the volatilization of the aroma. The mace is simply dried in the sun, and then sprinkled with salt water, after which it is fit for exportation.”*

QUALITIES AND CHEMICAL PROPERTIES.—Nutmegs should be chosen large, of the shape of an olive, *heavy*, and firm, of a lightish grey colour on the outside, beautifully striated, and reddish within; of a strong fragrant odour, warm aromatic taste, and of an unctuous feel. The oblong kind, and the smaller ones should be rejected. Distilled with water, they yield a large quantity of essential oil, resembling the spice itself in flavour; after the distillation, an insipid sebaceous matter is found

* Curtis' Boatn. Mag. N. S. vol. i.

swimming on the water; the decoction inspissated, gives an extract of an unctuous, very slightly bitterish taste, with little or no astringency. Rectified spirit extracts the whole virtue of nutmegs by infusion, and elevates very little of it in distillation; hence the spirituous extract possesses the flavour of the spice in an eminent degree. From an analysis by Neumann, it appears that the components of nutmegs are starch, gum, volatile oil, wax, and a fixed fat oil. The volatile oil, in which the active properties of the nutmeg chiefly reside, is of a pale-straw colour, limpid, transparent, and lighter than water. The expressed oil, erroneously called oil of mace, when first drawn, is limpid and yellow, but on cooling, acquires the consistence of spermaceti, and somewhat the appearance of Castile soap, being whitish, mottled with reddish brown. Its odour is agreeable, and slightly aromatic, and its taste fatty, pungent, and bitterish. It appears to be a vegetable cerate, consisting of fixed oil, volatile oil, and wax. "Nutmegs are frequently punctured and boiled in order to obtain the essential oil, and the orifices afterwards closed with powdered sassafrass."

OIL OF NUTMEGS is expressed from imperfect nutmegs, and such as are unfit for the European market: there are three sorts of it, commonly called *oil of mace*. The best is brought in stone jars; softish, of a yellow colour, an agreeable fragrant smell, greatly resembling that of the nutmeg. This is denominated Banda soap, and should be chosen free from impurities, and of a good colour. The next comes from Holland, in solid masses, generally flat, and of a square figure; paler coloured, weaker in smell, and inferior in its quality to that of India. The last is the worst, and seems to be a composition of suet, palm oil, or some such matter, flavoured with a little genuine oil.

MACE is a thin, flat, membranaceous substance enveloping the nutmeg; of a lively reddish brown or saffron colour, of a pleasant aromatic smell, and a warm, bitterish pungent taste. Mace should be chosen fresh, tough, oleaginous, of an extremely pungent smell, of a bright reddish yellow, the brighter the better; the smaller pieces are esteemed the best. The state it is in when packed, should be particularly attended to; if it be too

dry, it will be broken, and lose much of its fragrance; if too moist, it is subject to decay and breed worms. It should be packed in bales, pressed down close and firm, whereby its fragrance and consistence will be preserved.

MEDICAL PROPERTIES AND USES.—Nutmegs, which are universally known as a kind of delicate spice, are chiefly employed in medicine to impart their grateful aromatic flavour, and to obviate the irritating effects of drastic purgatives. They are supposed to be cordial, carminative, anodyne, and astringent; and with a view to the last-mentioned effects, they have been used in diarrhoea and dysentery. Given in large quantities, the nutmeg produces stupor, drowsiness, and other symptoms of narcotic poisons, in consequence of which Cullen warns us not to administer it to patients disposed to apoplexy. Bontius also speaks of their anodyne effects as a frequent occurrence in India. The *volatile oil*, possessing the taste and odour of the fruit in a concentrated degree, is occasionally used as an external stimulant; and the *expressed oil*, improperly called oil of mace, is generally prescribed in the same manner.

DOSE.—The dose of the nutmeg (which is sometimes employed to relieve nausea and vomiting, or to check diarrhoea, when given in wine) is from four grains to a scruple: of the *volatile oil*, from two to eight drops.

MACE is also chiefly used for culinary purposes; but, according to Dr. Ainslie, “is a favourite medicine with the Hindoo doctors, who prescribe it in the low stages of fever, in consumptive complaints, and humoral asthma; and also, when mixed with aromatics, in wasting and long-continued bowel complaints, in doses of from eight to twelve grains, and sometimes to as much as half a drachm; but they generally administer it cautiously, from having ascertained that an overdose is apt to produce dangerous stupor and intoxication.

TINCTURA NUCIS MOSCHATÆ.

R. Nucis Moschatæ contriti, ℥iii.

Spirit. vini. ten. lbij. M.

OFF. PREP.—Spiritus Myristicæ. L. E.

Spiritus Lavandulæ compositus. L. E. D.

Mistura Ferri compositæ. L.



Veratrum album.

VERATRUM ALBUM.

White flowered Veratrum, or White Hellebore.

Class XXIII. POLYGAMIA. Order I. MONÆCIA.

Nat. Ord. CORONARIÆ, Lin. JUNCi, Juss.

GEN. CHAR. *Calyx* 0. *Corolla* 6-petalled. *Styles* permanent. *Capsules* 3, many seeded. *Seeds*, compressed, imbricated, winged at each end. Some flowers male.

SPEC. CHAR. *Panicle* thrice compounded. *Petals* ascending.

Syn.—*Helleborus albus flore subviridi. Bauh. Pin.* 186.

Helleborus albus vulgaris. Park. Theatr. 217.

Helleborus præcox. Ger. Em. 440.

Elleborum album, Matth. Valgr. v. 2. 559.

Veratrum flore subviridi. Tourn. Inst. 272.

Veratrum spica paniculata, floribus maribus et feminis, n. 1204. Hall. Hist. v. 2. p. 96.

Veratrum album. Lin. Sp. Pl. 1479; *Willd. v. 4.* 895; *Jacq. Austr. v. 4. t. 335*; *Mill. Ic. t. 271*; *Fl. Dan. t. 1121. Woodv. t. 100.*

FOREIGN.—*Hellébore blanc. à fleur pâle, Fr.*; *Elleboro bianco, It.*; *Vedegambre blanco, Sp.* *Helleboro branco, Port.*; *Die weisse Niezwurzel, Ger.*; *Witbloemige nieswortel, Dut.*; *Hvit prustrot, Swed.*; *Tschemeriza, Rus.*

WHITE HELLEBORE is a native of the mountainous districts in most parts of Europe, from Norway to Greece, but not of Great Britain. This stately plant, accompanied by the *Gentiana lutea*, makes a magnificent appearance in rich pastures on the alps of Switzerland, where they both grow in the greatest abundance. It is, of course, a hardy perennial, in our gardens, where it has been cultivated from time immemorial; flowering from June to August.

The root is tuberous, fleshy, brownish externally, and fur-

nished at the base, with long, simple, white, cylindrical fibres. The stem is from two to four or five feet high, stout, erect, simple, hairy, and terminated in a large branching downy panicle, with alternate spikelets, of innumerable greenish white flowers, having little or no scent. The leaves are large, elliptical and entire, surrounding the stem at the base, plaited longitudinally, smooth, of a fine green colour, the uppermost becoming oblong lanceolate bracteas. The corolla consists of six petals, of a pale green colour, which are oblong, lanceolate, veined, spreading, of a coriaceous texture, and accompanied by an elliptical-lanceolate, downy bractea. The filaments are six, closely surrounding the germen, shorter than the corolla, diverging, and terminated by quadrangular anthers; the germen is three in each hermaphrodite flower, oblong, with spreading styles, which are terminated with bifid stigmas. The capsules are three, oblong, compressed, 2-celled, bursting at the inner edge, and containing many oblong, compressed, imbricated seeds, winged at each end. Fig. (a) represents a front and back view of a stamen and anther; (b) the three germen and styles.

The Green Veratrum (*V. viride*) a North American species, greatly resembles in its foliage and habit the White Hellebore, but the panicle is larger and greener, its branches longer and more cylindrical, spiked, not racemose, each flower being nearly or quite sessile. The petals are also broader; their margins being thickened and mealy about the base. The Veratrum *nigrum*, or Black Hellebore, agrees with the Veratrum *album* in habit and leaves, but is somewhat taller, and is very remarkable for the very dark purplish-brown, almost black hue of its flowers, which exhale a faint cadaverous odour. It is a native of dry mountainous situations in Siberia, Hungary, Austria and Greece; flowering in July.

QUALITIES AND CHEMICAL PROPERTIES.—When recent, this root has a disagreeable odour: as met with in the shops scarcely any. To the taste it is acrid, nauseous, and bitter, excoriating the mouth and fauces; while the powder, if applied to wounds, produces effects on the animal economy of a highly deleterious nature; as may be seen by referring to its poisonous

effects. If applied to the membrane lining the nose, it proves a violent sternutatory.

On analysis, the root of the *Veratrum album* yielded to MM. Pelletier and Caventou, 1. A fatty matter composed of oil, adipocire, and an acid similar to the sebacic, but uncrystallizable; 2. Yellow extractive colouring matter; 3. Acid gallate of *veratrine*; 4. Gum; 5. Fecula; 6. Woody fibre; the ashes containing carbonates of potass and lime, sulphate of lime and silica.

It is on the *Veratrine* that its poisonous effects depend; and these successful chemists, amongst many other brilliant discoveries, have remarked that almost all the individuals of this family of plants, exert a common action over animals, owing to this principle pervading them. They first analysed the seeds of the *Veratrum sabadilla*; isolating the *veratrine*, in which they recognised all the alkaline characters. They ultimately discovered it in the root of *Colchicum autumnale*, and in that of our plant.

PREPARATION OF VERATRINE.—They repeatedly digested the seeds of the *Veratrum sabadilla* in boiling alcohol. These tinctures, filtrated whilst almost boiling, deposited, on cooling, whitish flakes of wax. They redigested the matter which remained dissolved, after evaporating it to the consistence of an extract, in cold water: a small quantity of fatty matter now remained on the filter. The solution was slowly evaporated, and it formed an orange yellow precipitate, which possessed the characteristics of the colouring matter found in almost all the woody vegetables. On adding a solution of acetate of lead to the liquor, which was still deeply coloured, a new and very abundant yellow precipitate was immediately formed, which was separated by means of the filter. The liquor, now nearly colourless, still contained, amongst other substances, the acetate of lead, which had been added in excess: a current of Hydrosulphuric acid was used to separate the lead. The liquor was then filtrated and concentrated by evaporation, treated by magnesia, and again filtrated. The magnesian precipitate was digested in boiling alcohol. The alcoholic liquors yielded on evaporation, a pulverulent substance, which was extremely acrid, and possessed all the properties of the alkalies. This substance was at first yellowish; but, by solutions in alcohol, and subsequent precipitations, caused by pouring water into the alcoholic solutions, it was obtained in the form of a very white and perfectly inodorous powder.

M. Meissner, who discovered the *veratrine* nearly at the same time as M. M. Pelletier and Caventou, recommends the seeds of the *cevadilla* to be treated with undilute alcohol, the alcoholic infusion evaporated, the residuum treated with water, the liquor filtered, and the

veratrine to be precipitated by the carbonate of potass: it then only remains to wash the precipitate with water.

CHEMICAL PROPERTIES OF VERATRINE.—Veratrine is scarcely at all soluble in cold water; boiling water, however, dissolves $\frac{1}{1000}$ of its weight, and becomes sensibly acid.

It is very soluble in ether, and still more so in alcohol. It is insoluble in the alkalies, and soluble in all the vegetable acids. It saturates all the acids, and forms with them incrustallizable salts, which, on evaporation, take the appearance of gum. The sulphate alone affords rudiments of crystals when its acid is in excess.

Nitric acid combines with veratrine; but if added in excess, especially when concentrated, it does not produce superoxidation, as in the cases of morphine and strychnine; but very rapidly resolves the vegetable substance into its elements, and gives birth to a yellow detonating matter analogous to the *bitter of Welther*.

Veratrine restores the blue of turnsol paper when reddened by acids. Exposed to the action of heat, it liquefies at a temperature of 50° (122° Fah.) above zero, and has then the appearance of wax: on cooling, it forms an amber-looking mass of a translucent appearance. Distilled on the naked fire, it swells up, becomes decomposed, and produces water, much oil, &c. A voluminous, carbonaceous, mass remains, which, when incinerated, leaves only a very slightly alkaline residuum.

POISONOUS EFFECTS.—Taken internally, in over-doses, white hellebore excites violent vomiting and purging, followed by copious discharges of blood from the bowels. It also produces violent effects on the nervous system, attended by great prostration of strength, anxiety, tremors, loss of voice, vertigo, syncope, deep inspirations, sinking and intermission of the pulse, convulsions, and cold sweats ushering in death.

Wepfer affirms that he administered to a puppy of three weeks old a scruple of white hellebore mixed with milk: the animal instantly vomited it, had some alvine evacuations, and a few convulsive movements; an hour afterwards it appeared to be dead. In half an hour it was opened: the heart and diaphragm were contracting; the interior of the stomach was somewhat red.*

Amongst many other experiments of Orfila, he made an incision in the internal part of a dog's thigh, and sprinkled the wound with 20 grains of white hellebore root finely powdered; the lips of the wound were brought together by several stitches, and the animal was muzzled, in order to prevent him applying his tongue to the part operated on. Six minutes after, he vomited; he lay down upon the belly, and made some moaning; at three-quarters past eight he had already made more than twenty times violent efforts to vomit, and had thrown up

* *Cicutæ Aquaticæ Historia*, p. 219.

some bilious mucosities : he suffered such a degree of vertigo as rendered him incapable of advancing two steps without falling : he still retained the use of his senses, and uttered no moan : his eyelids were frequently agitated by a kind of convulsive movement. At nine o'clock he could no longer stand : the pulsations of the heart, which were strong, hurried, and irregular, did not appear to correspond with the state of stupefaction in which the animal was plunged ; he often performed the motions of deglutition. At half past nine, the eyelids and the pulsations of the heart were in the same condition ; the inspirations were very deep ; there was no convulsive movement, and the animal was so far sunk, that he might have been taken for dead. At ten o'clock the pupils began to be dilated. At one no change had taken place ; he was shaken ; he made a slight movement, and fell again instantly : the pupils were extremely dilated, and the snapping of the eyelids went on increasing. He expired at three in the afternoon. An hour after, he was opened : there was only a slight oscillation of the heart ; the blood contained in both ventricles was fluid : the lungs, which were distended with blood, and somewhat less crepitating than in their natural state, were spotted over with some black patches : the interior of the rectum presented several black spots : the mucous membrane of the stomach was a little inflamed as well as the wound. Similar results were obtained with two other animals, except that in one case, the digestive canal had sustained no injury.

At six in the morning, a robust dog was made to take the fluid obtained by treating an ounce of white hellebore by boiling water. This fluid had been filtered and concentrated. The œsophagus was then tied : in five minutes the animal made efforts to vomit. At seven o'clock he began to experience a weakness in his posterior extremities : he vacillated in walking. These symptoms went on increasing, and the animal died at eleven o'clock. He was opened the next day. The stomach contained a tolerably large quantity of thick mucus : it was very little inflamed. The mucous membrane of the rectum was of a red colour tolerably bright : the lungs exhibited livid spots ; they were dense, and but little crepitating.*

Etmuller, in the preface to his work on Surgery, states that this root, when applied to the abdomen, produces violent vomiting ; and Schreder observed the same phenomenon to take place, when this root was used as a suppository. Van Helmont also says, that a royal prince died in three hours after taking a scruple of this poison, which induced convulsions.

Similar effects, but in a much more violent degree, follow the use of *veratrine*, as the following account from Majendie's Formulary proves.

* It has been remarked that inflammation of the rectum is a constant occurrence when the animals who have taken black hellebore root survived its administration for a few hours. The same effect is also produced when *Colchicum autumnale* produces death.

ACTION OF VERATRINE ON ANIMALS.—A very small quantity of acetate of veratrine thrown into the nostrils of a dog, instantly provokes violent sneezing, which sometimes continues for nearly half an hour.

One or two grains (gr. 0.82 or 16.4 troy) placed in the gullet, immediately occasions copious salivation, which continues for some time.

If a small quantity be thrown into any part of the intestinal canal, and the body be opened to observe the effects, the intestine is found to become much indurated, and to relax and contract alternately for a certain time. The part of the mucous membrane which comes in contact with the veratrine is inflamed; the irritation spreads, and vomiting and purging are produced. In a much larger dose the substance induces a very great acceleration of the circulation and of respiration, which is soon followed by tetanus and death.

The effects are still more rapid if one or two grains (gr. 0.82 or 1.54 troy) be thrown into the pleura, or into the tunica vaginalis. In less than ten minutes death occurs, preceded by tetanic convulsions.

The same quantity thrown into the jugular vein also induces tetanus and death, in a few seconds. Dissection shews, even in this case, that the veratrine has produced an effect on the intestinal canal; for the mucous membrane is found to be highly injected. The lungs also present signs of inflammation and of engorgement.

ACTION OF VERATRINE ON MAN IN A STATE OF HEALTH AND DISEASE.—The effects of veratrine in a large dose have not been observed on man: they would, however, doubtless be the same as those which are noticed in animals.

The taste of veratrine is very acrid, but without bitterness. It excites a very copious salivation, however small the quantity may be which is put into the mouth.

Though veratrine is absolutely inodorous, it is inconvenient to smell at it too closely when in a state of powder; for even the small quantity which is thus carried into the nostrils is often sufficient to produce violent sneezing, which may become dangerous.

A dose of a quarter of a grain (gr. 0.205 troy) rapidly induces very abundant alvine evacuations. If the dose be augmented, more or less violent vomiting is occasioned.

M. Orfila lately gave it in the dose of two grains (gr. 1.64 troy) in the 24 hours, without producing too many alvine evacuations. The subject of the case was an old man, who had been struck with apoplexy some time previously. This circumstance forms an additional proof of the influence which the nervous system possesses over the mode of action of medicines.

After having cautiously tasted the mixture which contained the two grains (gr. 1.64 troy) of veratrine, I experienced, for several hours, an almost insupportably acrid sensation in the mouth and pharynx, the impression of which had not entirely disappeared on the following day. The patient felt no such inconvenience.

CASES PROPER FOR THE EXHIBITION OF VERATRINE.—As veratrine produces the same effects as the plants from which it is extracted, it may be substituted very advantageously for them; because it

permits the quantity of the active substance used to be estimated, which the others do not.

Veratrine is particularly applicable in cases where it is necessary to excite quickly a strong action of the bowels. When given with this intention, it has answered very well in the case of old people, where an enormous accumulation of fæces existed in the large intestines.

TREATMENT.—See *Helleborus niger*, Art. XI.

MEDICAL PROPERTIES AND USES.—Like most other violent remedies from the vegetable kingdom, white hellebore was often employed by the ancients in formidable and obstinate diseases, as mania, melancholia, dropsies, epilepsy, canine madness, elephantiasis, chronic eruptions, &c. They considered it safer when it excited vomiting; Hippocrates wishing this to be its first effect: and experiments on animals prove that they were perfectly correct; as may be seen by referring to Ex. No. 1 and 2 in Orfila's Toxicology. Women and children, the aged and debilitated, and those affected with diseases of the chest, were considered as unfit objects for its administration; and as it is asserted to be capable of affording relief, when no sensible evacuation was produced, its violence was generally moderated by other combinations. In later days, Mayerne asserts that he administered from two to three grains of the extract of the root with considerable advantage in maniacal cases, where no remarkable evacuations took place; and the encomiums of Gesner, who gave it not as an evacuant, but an alterative, led to its extensive use, and induced several authors to publish the results of their investigations. But the fullest trial was made by Greting, who employed it in twenty-eight cases of mania and melancholia, some of which derived no benefit, while others were relieved, and five recovered. In almost all these cases it acted more or less on the excretions; critical evacuations were often evident, many sweated profusely, and there was an increased secretion of urine, saliva, and the mucous discharges. Uterine obstructions of long standing were also often subjugated.

At one time, and that very lately, it was believed by many that the *V. album* was the active ingredient of that celebrated medicine for gout, the *Eau Medicinale*. Although this opinion appears fallacious, it led to its employment in that disease conjoined with opium, and we recollect many years ago to have seen it adminis-

tered with considerable success; which will not appear so very remarkable to those who are aware that its active principle veratrine, is, as already observed, a constituent of the meadow saffron. White hellebore, as an internal medicine is again fallen into disuse. It is however still employed externally as a local stimulant; as an errhine; or in the form of decoction, or mixed in powder with lard, as an ointment in scabies, and herpetic eruptions.* As an errhine it should be very cautiously employed; and it often renders the compound sulphur ointment exceedingly irritating to delicate skins.

For internal administration the dose must not exceed two grains; and when used as a snuff, one pinch may be used every night, composed of four grains to about half a drachm of starch.

OFF. PREP.—Decoctum Veratri. *L.*

Tinctura Veratri albi. *E.*

Unguentum Veratri. *L.*

Unguentum Sulphuris comp. *L.*

* BARCLAY'S ITCH OINTMENT. The predominant ingredient in this composition, is the powder of white hellebore, slightly perfumed with essence of lemons; and it is inferior in efficacy to the Ung. Hellebori albi of the Pharmacopœias.



Acacia Catechu.

ACACIA CATECHU.

Catechu, or Medicinal Acacia.

Class XXIII. POLYGAMIA.—Order I. MONÆCIA.

Nat. Ord. LOMENTACEÆ, Lin. LEGUMINOSÆ, Juss.

GEN. CHAR. Hermaph. *Calyx* 5-toothed. *Corolla* 5-cleft, or formed of five petals. *Stamens* 4—100. *Pistil* 1. *Legume* bivalve.

Male. *Calyx* 5-toothed. *Corolla* 5-cleft, or formed of five petals. *Stamens* 4—100.

SPEC. CHAR. *Spines* stipulary, hooked, in pairs. *Leaves* hairy, bi-pinnate; first division of ten or twelve pair; second of many pair; with a gland at each extremity of the common foot-stalk. *Spikes* cylindrical, axillary, two or three together.

Syn.—*Mimosa Catechu*, Lin. *Suppl.* 409; *Woodv. Med. Bot.* 183. t. 66; *Roxb. Coromand.* v. 2. p. 40. t. 175.

Terra Japonica; *Kerr in Med. Obs. & Inq.* v. 5. p. 151. t. 4.

Acacia Catechu, *Willd.* v. 4. n. 73; *Ait. Kew.* v. 5. n. 44.

FOREIGN.—*Cachou*, *Acacia du Cachou*, Fr.; *Cacciù*; *Catechù*; *Catto d'India*, It.; *Cachu*, Sp.; *Katechubaum*, Ger.; *Katechu-boom*, Dut.

PROFESSOR WILLDENOW, who established the genus to which the subject of the present article belongs, first separated it from the Linnean *Mimosa*, by the characters of the fruit. Under *Mimosa*, he leaves such species as have a *lomentum*, or legume, separating into single-seeded joints. Of these he defines thirty-two, having a 5-toothed corolla, and only eight stamens; and to many of them, being sensitive, the name *Mimosa* is properly appropriated. Willdenow enumerates a hundred and two species, dividing them

into seven sections ; to which Mr. R. Brown has made several additions from New Holland, partly described in Aiton's *Hortus Kewensis*. They are all shrubby, perennial plants, with the exception of two or three species, which are herbaceous.

The *Acacia Catechu*, called in the province of Bahar, *coira* or *caira*, grows in great abundance in most of the mountainous districts of Hindoostan. It is a large shrub or tree, fifteen or twenty feet high, covered with a thick, scabrous, ferruginous bark, which is very red within, remarkably astringent, and somewhat bitter. The branches are round, spreading irregularly, and downy when young ; the older ones beset with numerous pairs of small recurved spines, originating in the stipulas. The leaves are placed alternately on the younger branches, and are composed of from fifteen to thirty pair of pinnæ, about two inches long, each having numerous linear leaflets, (often forty pair,) hardly a quarter of an inch long, covered with short hairs, and of a pale green colour. The common petiole is sometimes furnished with a few recurved prickles, and a small gland is placed between the bases of each pair of the pinnæ. The flowers are hermaphrodite and male ; axillary, on slender cylindrical spikes, three or four inches long, hairy, stalked, and of a pale yellow colour. The calyx is tubular, hairy, and 5-toothed ; the corolla of one piece, whitish, divided into five segments, and twice the length of the calyx. The filaments are numerous, crowned with roundish anthers, and united at the base with the germen, which is oval, supporting a slender style, and terminated by a simple stigma. The fruit is a straight, smooth, pointed legume, or pod, three or four inches long, and less than one broad, containing six or eight roundish seeds.

Catechu was formerly supposed to be an earth, found in Japan ; and hence the name *Terra Japonica*, by which it is still designated occasionally, tends to perpetuate the error. Mr. Kerr, assistant surgeon to the Civil Hospital in Bengal, was the first to describe the tree, in Vol. V. of " *Medical Observations and Enquiries*," which contains also a very correct plate. He says, that it is one of the most common trees to be met with in the uncultivated mountains of Rotas, and Pallamow, which are districts of Hin-

doostan, in the province of Bahar, westward of Bengal; and is frequent in many other parts of that country, in various soils. The following is the mode of preparing the Extract, as described by that gentleman :—

“ After felling the trees, the manufacturer carefully cuts off all the exterior white part of the wood. The interior coloured wood is cut into chips, with which he fills a narrow-mouthed unglazed earthen pot, pouring water upon them until he sees it among the upper chips; when this is half evaporated by boiling, the decoction, without straining, is poured into a flat earthen pot, and boiled to one third part; this is set in a cool place for one day, and afterwards evaporated by the heat of the sun, stirring it several times in the day; when it is reduced to a considerable thickness, it is spread upon a mat or cloth which has previously been covered with the ashes of cow dung; this mass is divided into square or quadrangular pieces by a string, and completely dried by turning them frequently in the sun, until they are fit for sale.

“ This Extract is called *cutt* by the natives, by the English *cutch*, by authors, *terra Japonica*, *catechu*, *cadtcchu*, *cashow*, *cachou*, *caitchu*, *cast-joe*, *cachore*, *kaath*, *cate*, &c. In making the Extract, the pale-brown wood is preferred, as it produces the fine whitish Extract: the darker the wood is, the blacker the Extract, and of less value. They are very careful in drying their pots upon the fire before they are used; but very negligent in cutting their chips upon the ground, and not straining the decoction; by which, and the dirty ashes they use, there must be a considerable quantity of earth in the Extract, besides what avarice may prompt them to put into it. This the learned have proved from their laborious chemical decompositions. The Extract thus prepared, is bought from the manufacturer for twelve or fifteen shillings the eighty pounds weight. I could never learn that the *terra Japonica* was produced from the *areca* or *betle-nut*; nor is it indeed credible that it should, notwithstanding that this is the general and received opinion, for the *betle-nut* is scarce ever so low in price as the *terra Japonica*, and was it to be extracted from thence, the price would be twenty times dearer than the present sales. Where the *areca nut* is in great plenty, they may perhaps join some of the fruit in making the Extract, to answer a double purpose, for the most frequent use of both is in chewing them together as Europeans do tobacco; to these two substances they add a little shell lime, and a leaf called *pauw*. Here I am obliged to have recourse to the natives, whom from experience I have found to be very fallacious, therefore I will not answer for their veracity.

“ The Extract is much used in dyeing and painting chintz, and other cloths; combined with vitriolic salts, a black colour is produced; mixed with oil, they paint the beams and walls of houses to preserve them, and to defend them from the destructive white ants; it is sometimes mixed with their wall plaister.

“ The black physicians of this country divide the diseases of mankind, as well as their medicines, into hot and cold; to the cold disease they

oppose a hot medicine, and to the hot disease a cooling medicine, among which last this Extract is supposed very powerful. When too profusely used, it is said to be a destroyer of venereal pleasures. It is given at the rate of two ounces per day to tame vicious horses.

“ *The Furnace used in making the Extract.*—Dig a hole in the earth five or six feet long, two feet deep, and two feet wide ; cover this with an arch of clay, leaving one end open to receive fuel, and take out the ashes ; in the arch, three or four circular openings are made, adapted to the bottoms of the pots : the same structure may be raised above ground, made of clay. This furnace is very valuable for its simplicity, easy construction, and small expense of fuel.

“ The Extract is a principal ingredient in one of their ointments of great repute, composed of blue vitriol four drachms, Japan earth four ounces, alum nine drachms, white resin four ounces ; these are reduced to a fine powder, and mixed with the hand, adding olive oil ten ounces, and water sufficient to bring the mass to the proper consistence of an ointment. This ointment is used in every sore, from a fresh wound to a venereal ulcer. A gentleman (Mr. Robert Hunter, Surgeon to the Patna Factory) of great practice told me, he used this ointment with success beyond expectation ; and he remarks, that whether it is owing to the laxity of the solids in this hot climate, or to some other cause, he is clearly of opinion, that our greasy ointments have not the desired effect. Certain it is they avoid that *empyreuma* which our ointments often receive in boiling, which cannot be a promising application to a tender sore. As to the virtues of this Extract in European practice, I must be silent ; they are already better described than I can pretend to do.”

QUALITIES AND CHEMICAL PROPERTIES.—There are two kinds of this extract ; one is sent from Bombay, the other from Bengal ;* but they differ from each other more in their external appearance, than in their chemical composition. The extract from Bombay is of an uniform texture, and of a red-brown tint ; its specific gravity being generally about 1.39. The extract from Bengal is more friable, and less consistent ; its colour is like that of chocolate externally, but when broken, its fracture presents streaks of chocolate, and of red-brown. Its specific gravity is about 1.28. Their tastes are precisely similar, being astringent, but leaving in the mouth a sensation of sweetness. They do not deliquesce, or apparently change, by exposure to the air. Solutions copiously precipitate gelatine, and speedily tan skins. The strongest infusions of the two kinds do not differ

* A sort of Catechu or *gutta gambir*, made in Sumatra, Prince of Wales' Island, &c. has been shown by Mr. Hunter, secretary to the Asiatic Society, to be the produce of a species of *Nauclea* ; hence, probably, the two sorts of Catechu known to druggists may be thus accounted for.—*Trans. Lin. Soc.* vol. ix. p. 209.

sensibly in their nature or composition. Their colour is deep red-brown, and they communicate this tinge to paper; they slightly redden litmus paper; their taste is highly astringent, and they have no perceptible smell. The strongest infusions act upon the acids, and form alkalies, in a manner analogous to the infusion of galls. Sulphuric and muriatic acid precipitate them. With strong nitrous acid they effervesce, and lose their power of precipitating solutions of isinglass and the salts of iron. The pure alkalies enter into union with their tannin, so as to prevent it from being acted upon by gelatine. Solutions of lime, of strontia, and of barytes, poured into the infusions of catechu, produce copious precipitates. If carbonate of magnesia be added to the infusion, it loses its power of precipitating gelatine. The carbonates of potash, of soda, and of ammonia, also deprive them of their power of acting upon gelatine; though this power is restored by an acid. Solution of muriate of tin acts upon the infusion of catechu, in a manner similar to that in which it acts upon the infusion of galls. Both kinds of catechu are almost wholly soluble in large quantities of water; and to form a complete solution, about eighteen ounces of water, at 52°, are required to a hundred grains of extract. A considerable portion of both kinds of catechu is soluble in alcohol; but, after the action of the alcohol upon it, a substance remains, of a gelatinous appearance, and a light brown colour, which is soluble in water, and is analogous in its properties to gum or mucilage.

The peculiar extractive matter of the catechu, is much less soluble in water than the tanning principle; and when a small quantity of water is used to a large quantity of catechu, the quantity of tannin taken up is much greater than that of the extractive matter. The extractive matter is much more soluble in warm water than in cold; and when saturated solutions of catechu are made in boiling water, a considerable quantity of extractive matter, in its pure state, falls down, as the liquor cools. An aqueous solution of the extractive matter, when mixed with solutions of nitrate of alumine, and of muriate of tin, becomes slightly turbid. Nitrate of lead gives a dense brown precipitate. It is not precipitated by the mineral

acids. Two hundred grains of Bombay Catechu, afforded 109 of tannin, 68 of extractive matter, 13 of mucilage, and 10 of sand, calcareous earth, and other impurities. The variety from Bengal gave, by a similar analysis, 97 of tannin, 73 of extractive matter, 16 of mucilage, and 14 of residual matter; sand, with a small quantity of calcareous and aluminous earth, in two hundred grains.

MEDICAL PROPERTIES AND USES.—Catechu is largely employed in the east, medicinally; but especially when used with the *betel-nut* for chewing, a practice almost universal over the Indian continent.

In this country it is extensively employed for all those disorders in which a mild, unirritating, powerful astringent is required; such as chronic diarrhœa and dysentery; hæmorrhoidal and uterine hæmorrhages, leucorrhœa, gleet, &c., and the Bombay catechu, as containing the greatest portion of tannin, is that which is best adapted for medicinal use. It is one of the most valuable medicines of this class, and may be advantageously used in all cases where we wish to restrain immoderate discharges, especially when not attended by inflammatory action, or produced by congestion. With this indication, it is usually combined with the bitter tonic and aromatic barks. It is also used in the form of troches, mixed with gum-arabic and sugar, to dissolve slowly in the mouth; and in this form it often much assists the clearness of the voice in persons that have occasion to speak long in public. As a topical astringent it is used in scorbutic affections of the gums, and aphthous ulcerations of the mouth and fauces. Dr. Thomson has found the slow solution of a small piece in the mouth, “a certain remedy for the troublesome cough induced by a relaxed uvula, hanging into, and irritating the glottis.”

DOSE.—From gr. x. to ʒi. of the Powder; or, ʒi. to ʒiij. of the Tincture.

OFF. PREP.—Infusum Catechu. L. E. Tinctura Catechu, L. E. Electuarium Catechu compositum, E. D.



Acacia vera.

Widdell Fecit

ACACIA VERA.

Egyptian Gum-Arabic Acacia, or Egyptian Thorn.

SPEC. CHAR. *Spines* stipulary, in pairs, linear-awl-shaped. *Leaves* doubly pinnate; first division of five or six pair; second of many pair; common stalk glandular. *Heads* axillary, about three together. *Legume* necklace-like, nearly flat, smooth.

Syn.—*Mimosa nilotica*, Lin. *Sp. Pl.* 1506; *Hasselq. Travels, Engl. ed.* 250; *Wodv.* 187. t. 67.

Acacia vera, Willd. 4. 1085. n. 87. *Ait. Hort. Kew.* v. 5. n. 48; *Bauh. Hist.* v. 1. p. 2. 429; *Vesling Ægypt.* 6 t. 6.

Ακακία, *Diosc.* l. 1. cap. 133.

FOREIGN.—*Acacia*; *Acacia vrai*, Fr.; *Acacie d'Egypte*, Lamarck; *Gommier Rouge*, Adanson.; *Acacia*; *Acazia*; *Acacia vera*; *Acacia egiziana*, It.; *Acacia*, Sp.; *Mimosa do Nilo*; *Acacia verdaiteiro*, Port.; *Die whre oder ägyptische Acacia*, Ger.; *Egyptische Acacia*, Dut.

THIS plant, which affords the finest Gum Arabic of commerce, was originally referred by Linneus to the extensive genus *Mimosa*, under the title of *Mimosa nilotica*; but has latterly been removed by Willdenow to the new genus *Acacia*. It is a native of the sandy deserts of Arabia, Egypt, and the western parts of Asia; and, according to Mr. Jackson, grows abundantly in Barbary, and other parts of Africa. The original gum-arabic tree was known to the earlier botanists, and appears to have been cultivated by Gerarde in 1596; but few persons are acquainted with living, or even dried specimens, especially of the legume. Our figure was made from a dried specimen, (perhaps the only one in this country,) in the herbarium of A. B. Lambert, Esq. F.R.S.,

which was brought from upper Egypt, by Dr. Clarke, as the true *Acacia vera*.

This, like the preceding species, rises several feet in height ; the stem is crooked, and covered with a smooth grey bark, which on the branches has a yellowish green, or purplish tinge. The leaves are alternate, bipinnate, composed of several pairs of opposite pinnæ, with numerous pairs of small, deep green, smooth leaflets. At the base of the leaves are two opposite awl-shaped spines, nearly erect, and having a slight, glandular swelling below. The flowers are of a bright yellow colour, and collected into globular heads, four or five together, upon slender foot-stalks, that arise from the axillæ of the leaves. Immediately below each head of flowers, is placed a pair of small, ovate bractæas. The calyx is bell-shaped and 5-parted ; the stamens are numerous, thread-like, and furnished with roundish, yellow anthers ; the germen is conical, with a slender style and simple stigma. The legumes are four or five inches long, moniliform, nearly flat, smooth, of a pale brown colour, and contracted into numerous orbicular portions, in each of which is lodged a flattish seed. This character, as a distinguished botanist justly observes, clearly distinguishes the present species from *Acacia arabica* ; being more strictly contracted into orbicular portions, with an obliquity well expressed in the wooden cut of Veslingius.

The gum, says Mr. Jackson, called Morocco or Barbary gum, is produced from a high, thorny tree, called *Attaleh*, having leaves similar to the *Arar*, or Gum Sandrac tree, and the juniper. The best kind of Barbary gum is procured from the trees of Morocco, Ras-el-wed, in the province of Suse, and Bled-hummer, in the province of Abda : the secondary qualities are the produce of the Kedma, Duguella, and other provinces. The tree grows abundantly in the Atlas mountains, and is found also in Bled-el-jerrêde. The gum, when new, emits a faint smell, and when stowed in the warehouse, it is heard to crack spontaneously for several weeks ; and this cracking is the surest criterion of new gum, as it never does so when old : there is, however, scarcely any difference in the quality. The wood (of the tree) is hard, and takes a good polish ; its seeds, which are enclosed in a peri-

carpium, resemble those of the lupin, yield a reddish dye, and are used by the tanners in the preparation of leather. These seeds attract the goats, who are very fond of eating them. The more sickly the tree appears, the more gum it yields; and the hotter the weather, the more prolific it is. A wet winter, and a cool, or mild summer, are unfavourable to gum.—(Jackson's Hist. of Morocco, fol. 84.)

The purest and finest gum-arabic is brought in caravans to Cairo, by the Arabs of the country round Mount Tor and Sinai; who bring it from this distance on the backs of camels, sewn up in bags, and often adulterated with sand and other matters. The gum exudes spontaneously from the bark of the trunk and branches of the tree, in a soft, nearly fluid state, and hardens by exposure to the air, or heat of the sun. It begins to flow in December, immediately after the rainy season, near the flowering time of the tree. Afterwards, as the weather becomes hotter, incisions are made through the bark to assist the transudation of the juice. All the gum that was employed in medicine, or the arts, was formerly brought from Arabia, or from Egypt, whence its name was derived; and it was not till about two hundred years ago, that the gum of Senegal was introduced into commerce. That adventurous and persevering naturalist, Adanson, who explored the district of the river Senegal with so much assiduity, contributed to extend our knowledge of the trees from which the gum might be procured in the western parts of Africa; and at present nearly the whole of what is imported into Europe comes from that country.

Several kinds of gum, yielded by different trees, are occasionally to be met with, but that which is commonly substituted for it, as we have already observed, is brought from the island of Senegal, on the coast of Africa, and is called *Gum Senegal*. It is generally in larger masses, and is of a darker colour; is more tenacious, and breaks with a vitreous, even fracture. It is not so soluble in water as the true Gum Arabic, and leaves at the bottom a stringy substance.* It is the sort chiefly employed

* The name of *Cerasin* has been applied to those gummy substances which readily dissolve in boiling water, but separate again from it in a gelatinous mass.

by the calico-printers, but does not go so far in thickening water. In India, what is termed the *Babul* tree, (*Acacia arabica*,) furnishes a very fine gum, which is extensively employed in the place of Gum Arabic; and Dr. Ainslie thinks that it is the same tree that is referred to by Dr. Wittman, in his Travels, (p. 231,) as yielding Gum Arabic in Turkey. It is in small, clear masses, of a semi-transparent or very pale yellow colour; but it is essential to have this gum well garbled in India; and care should be taken that it is not intermixed with a gum resembling it, but generally in larger pieces, which is quite worthless. The *Feronia elephantum* of Roxburgh also yields a valuable gum, similar to Gum Arabic, which is commonly used by all the practitioners of lower India; and, according to Dr. F. Hamilton, gum, simply so called, may be procured in the Mysore, from the *Melia azederach*; *Chironia glabra*; *Mangifera indica*; *Cassia auriculata*; *Ægle marmelos*; *Shorea robusta*, and several other trees.

QUALITIES AND CHEMICAL PROPERTIES.—Gum Arabic is usually in small pieces, like tears; moderately hard; somewhat brittle, and may be reduced to a fine white powder. When pure, it is colourless, but has commonly a yellow tinge, and is not destitute of lustre. It has no smell. Its taste is insipid. Its specific gravity varies from 1.3161 to 1.4317. Water may be said to dissolve it entirely. The solution is known by the name of *mucilage*; which is thick, and adhesive: it is often used as a paste, and to give stiffness and lustre to linen. When spread out thin, it soon dries, but readily attracts moisture, and becomes glutinous. When mucilage is evaporated, the gum is obtained unaltered. It may be kept for years, without undergoing putrefaction. When gum is exposed to heat, it softens and swells, but does not melt; it emits air bubbles, blackens, and at last, when nearly reduced to charcoal, emits a low blue flame. After the gum is consumed, there remains a small quantity of white ashes, composed chiefly of the carbonate of lime and potash. Vegetable acids dissolve gum without alteration: the strong acids decompose it. Chlorine converts gum into nitric acid, according to the experiments of Vauquelin. If nitric acid be slightly heated

upon gum till it has dissolved it, and till a little nitrous gas is exhaled, the solution, on cooling, deposits sacclactic acid. Malic acid is formed at the same time; and if the heat be continued, the gum is at last changed into oxalic acid. Thus, no less than three acids are developed by the action of nitric acid on gum.

Gum is insoluble in alcohol and ether, and both precipitate mucilage.*

From the experiments of Vauquelin, it appears that gum contains traces of iron; and he conjectures, that the lime which it contains is usually combined with acetic or malic acid. Berzelius analysed it, by burning it along with chlorate of potash, and found it composed of,

Oxygen	51.306
Carbon	41.906
Hydrogen	6.788
<hr/>	
	100.000

MEDICAL PROPERTIES AND USES.—Gum Arabic is extensively employed for a number of purposes, both in the arts and in medicine. It is frequently used either to suspend in water various substances, which could not otherwise be kept equally diffused in that liquid, or as a useful, colourless cement. Gum Senegal resembles Gum Arabic so nearly, that it is employed instead of it for all purposes in Hindoostan; and in this country is used in very large quantities by the calico-printers to mix the colours and the mordants in block printing. Gum Arabic forms the basis of crayons, and the cakes of water-colours; and of several liquid colours, of which common writing ink is a familiar example.

All the vegetable mucilages are considerably nutritious; hence in the countries where the Gum Arabic and Senegal grow native, they form an important article of diet, either alone or mixed with milk, rice, and other substances. In Guzerat, especially in the wastes, where the Balbul tree (*Acacia arabica*) is very common; the poor inhabitants use the gum for food. Hesselquist informs

* Thomson's System of Chemistry, vol. iv. p. 36.

us, that a caravan whose provisions were exhausted, preserved themselves from famine, by the Gum Arabic, which they were bringing as merchandise.

In medicine, this gum is used either by itself, or as a vehicle for other substances. Taken internally, its principal use is as a demulcent; to envelop acrid matter, and to cover the surfaces that are too sensible to external impressions. Hence it is sometimes allowed to dissolve gradually in the mouth, to allay irritation of the fauces; and its mucilage, sweetened with syrup, forms a useful remedy for tickling coughs, hoarseness, and diarrhoeas; as well as in cardialgia, arising from oily substances received into the stomach. In these cases, it is sometimes advantageously joined with opiates and aromatics. Though its action has been supposed not to extend beyond the fauces and alimentary canal, it has been frequently recommended in tenesmus, stranguary, gonorrhœa, gravel, and in almost all diseases of the urinary organs. It is given, either in powder, or dissolved in almond milk, &c. one ounce being sufficient to render a pint of liquid considerably glutinous.

In pharmacy, gum-arabic is employed to render oils, balsams, and resins, miscible with aqueous liquids; and to give tenacity to substances made into troches and pills. Even Mercury may be suspended in water, by being rubbed for a considerable time with gum-arabic; which preparation is called, from its inventor, *Plenk's solution*.

The pharmaceutical preparations into which gum-arabic enters as a principal ingredient, are the *Mucilago Acaciæ*, a simple solution of one part of the gum in two of boiling water; the *Emulsio Acaciæ Arabicæ*, *Ph. Ed.* which is gum-arabic dissolved in almond milk; the *Trochisci gummosi*, *Ed.*, with equal parts of gum, starch, and sugar; and the *Pulvis Tragacanthæ compositus*, *Ph. Lond.*, a powder made of tragacanth, gum-arabic, starch, and sugar. It is also an ingredient in the *Confectio amygdalarum*, *L.* *Mistura cornu usti*, *L.* *Mistura cretæ*, *L.* *Mistura Moschi*, *L.* *Mistura Guaiaci*, *L.* and the *Pulvis cretæ compositus*, *L.*



Fraxinus (V. mus.)

FRAXINUS ORNUS.

*Manna, or Flowering Ash.**Class XXIII. POLYGAMIA.—Order II. DIÆCIA.**Nat. Ord. SEPIARIÆ, Lin. JASMINEÆ, Juss.*

GEN. CHAR. Hermaph. *Calyx* 0, or 4-parted. *Corolla* 0, or 4-petalled. *Stamens* 2. *Pistil* 1. *Capsule* 1-seeded, lanceolate.—Female. *Pistil* 1, lanceolate.

SPEC. CHAR. *Leaflets* elliptic-oblong, pointed, bluntly serrated. *Flowers* with a corolla.

Syn.—*Fraxinus humilior* sive altera Theophrasti, minore et tenuiore folio, *Bauh. Pin.* 416.

Fraxinus florifera, *Scop. Carn. n.* 1250.

Fraxinus Ornus, *Sp. Pl. Willd. v.* 4. 1102.; *Sm. Fl. Græc. Sibth. v.* 1. 4. *t.* 4. *Woodv. v.* 1. 105. *t.* 36.; *Ehrh. Pl. Offic.* 270. *Arb.* 160.

FOREIGN.—*Manne*, Fr.; *Manna*, Ital.; *Mana*, Sp.; *Manna*, Ger.; *Tureneebeen*, Arab.; *Shirkhisht*, Hind.

THIS tree, which greatly resembles our common ash, is a native of the warmest parts of Europe. It grows abundantly in Calabria, Sicily, and on the highest and most rocky mountains of Greece, and is one of the most elegant trees that adorn our lawns, and pleasure-grounds; flowering in May, and June. Our figure of this plant was taken from Dr. Sibthorp's "*Flora Græca*," the most splendid botanical work ever published in this country.

The *Fraxinus Ornus* is a low tree, very much branched, and covered with a smooth grey bark. The leaves, which are smaller than those of the common ash, stand upon longish, channelled footstalks; are opposite, pinnate, and composed of several pair of leaflets, with a terminal one; the leaflets are opposite, about an inch and a half long, and three-fourths broad, of an oblong shape, pointed at each end, unequally serrated,

smooth, and of a bright green colour. The flowers are produced in loose panicles at the extremities of the branches, are supradecom-pound, scarcely the length of the leaves, and of a white or pale herbaceous colour. The segments of the calyx are ovate; the corolla consists of four oblong, linear, pointed petals; the filaments are two, spreading, and supporting large yellow incubent anthers; the germen is oval, with a very short style, and a notched stigma. The capsules are pendulous and compressed; and usually contain a single lanceolate cylindrical dark brown seed.

Fig. (A) represents a flower magnified; (a) the anthers; (b) the germen; (c) the capsules.

Manna is yielded by trees of different families, for although we are principally indebted to four species of ash, *F. ornus*; *F. rotundifolia*; *F. excelsior*; and *F. parviflora*; the larch, fir, orange, walnut, willow, mulberry, and the oak also produce it. At Briançon, in France, Manna is said to be collected from all sorts of shrubs; and the inhabitants observe that such summers as produce it in the greatest quantities, are very fatal to the plants. Their walnut-trees produce annually a considerable quantity; but if they happen to yield more than ordinary, they usually perish the following winter. From this it appears evident that manna is the extravasated juice of trees, and that they cannot afford to lose it: and what confirms this idea, is their secreting so much more when the summers are hot. The ancients were accustomed to find it on different species of trees; and therefore inferred that it was something wholly foreign to the tree: an error very easily embraced by those who were not aware that the nutritive juices of trees are nearly, if not wholly the same.

“The Manna tree, (*Fraxinus Ornus*) says Prof. Cirillo,* is common not only in Calabria and Sicily, but also on the famous mountain Garganus, situated near the old town of Sypontum, upon the Adriatic; and is mentioned even by Horace as an inhabitant of that mountain;—

Aut Aquilonibus querceta Gargani laborant,
Aut foliis viduantur Orni.

* Phil. Trans. vol. 60. p. 234.

“In all the woods near Naples the Manna tree is to be found very often ; but for want of cultivation it never produces any manna, and is rather a shrub than a tree. The manner in which the manna is obtained from the *Ornus*, though very simple, has been yet very much misunderstood by all those who have travelled in the kingdom of Naples ; and among other things they seem to agree that the best and purest manna is obtained from the leaves of the tree ; but this, I believe, is an opinion taken from the ancients, and received as an incontestable observation, without consulting nature. I never saw such a kind, and all those who are employed in the gathering of the manna know of none that comes from the leaves. The manna is generally of two kinds ; not on account of the intrinsic quality of them being different, but only because they are got in a different manner. In order to obtain the manna, those who have the management of the woods of the *Orni* in the months of July and August, when the weather is very dry and warm, make an oblong incision, and take off from the bark of the tree about three inches in length, and two in breadth : they leave the wound open, and by degrees the manna runs out, and is almost suddenly thickened to its proper consistence, and is found adhering to the bark of the trees. This manna, which is collected in baskets, and goes under the name of *manna grassa*, is put in a dry place, because moist and wet places will soon dissolve it again.

“ This first kind is often in large irregular pieces of a brownish colour, and frequently is full of dust, and other impurities. But when the people want to have a very fine manna, they apply to the incision of the bark thin straw, or bits of shrubs, so that the manna, in coming out, runs upon those bodies, and is collected in a sort of regular tubes, which give it the name of *manna in cannoli*, that is, manna in tubes ; this second kind is more esteemed, and always preferred to the other, because it is free and clear. There is, indeed, a third kind of manna, which is not commonly to be met with, and which I saw after I left Calabria ; it is very white like sugar ; but as it is rather for curiosity than for use, I shall say no more about it. The two sorts of manna already mentioned undergo no kind of preparation whatever

before they are exported; sometimes they are finer, particularly the *manna grassa*, and sometimes very dirty and full of impurities; but the Neapolitans have no interest in adulterating manna, because they always have a great deal more than they export; and if manna is kept in magazines, it receives often very great hurt by the southern winds, so common in our part of the world. When the summer is rainy, the manna is always scarce and bad."

Manna likewise exudes spontaneously and concretes into granules; it is known in the markets by the name of manna in tear.

The manna referred to by the ancient Greek writers is asserted, by Dr. Fothergill, to be portions of olibanum, broken off in the carriage of larger pieces, which by some is still called "manna of frankincense." The Arabians are supposed to be the first who brought manna into medicinal use, and the substance known by the name of *manna persicum*, is the *terenjabin* of Avicenna and Serapion; for, according to Rauwolf,* large quantities of it were brought from Persia to Aleppo, where it is known by the names of *trunschibil*, or *trunschibin*, doubtless corruptions of *terenjabin*. Rauwolf informs us, that it is gathered from the *Alhagi maurorum*, or *Hedysarum alhagi* of Linnæus, a plant which is minutely described by Tournefort.† But for further particulars respecting this substance we refer the reader to Dr. Fothergill's paper in the Phil. Trans. vol. xliii. f. 86, and to Dr. Ainslie's *Materia Medica*, vol. i. f. 209.

QUALITIES AND CHEMICAL PROPERTIES.—Pure manna is very light, and appears to consist of a congeries of fine capillary crystals. Its taste is sweet, and it leaves a nauseous impression on the tongue. When dissolved in water, it may be obtained again unaltered by a gentle evaporation. Alcohol dissolves it when assisted by heat; and the solution, when set aside, gradually deposits about $\frac{5}{8}$ ths of the manna, in a state of a fine white light spongy crystalline mass, bearing some resemblance to camphor. This deposit has an agreeable sweet taste, and instantly melts upon the tongue like snow in warm water. This may be considered as pure manna. It differs from sugar in the nature of its crystals, and in its more rapid solubility. By eva-

* Rauwolf's Itinerary, by Ray.

† Voyage to the Levant, vol. i. p. 247.

porating the solution, and setting it aside repeatedly, about $\frac{2}{3}$ ths more of the manna is deposited, but not so fine in colour, or taste, as the first precipitate. By evaporation to dryness, the remaining $\frac{1}{8}$ th is obtained in the state of a thick extract, which cannot be easily reduced to dryness. This may be considered as consisting chiefly of foreign bodies, to which manna owes its nauseous taste. Manna differs from common sugar in several remarkable particulars. It dissolves very readily and abundantly in alcohol, and crystallizes on cooling. When digested in nitric acid it yields both oxalic, and sacclactic acids; whereas sugar only yields oxalic acid. It does not ferment like sugar, and of course does not seem capable of furnishing alcohol.*

The common manna of the shops, according to the experiments of Fourcroy and Vanquelin, consists of four different ingredients: 1. Pure manna, which constitutes at least $\frac{3}{4}$ ths of the whole. 2. A little common sugar, which makes it fermentable to a small extent. 3. A yellow matter, with a nauseous odour, to which the purgative quality of manna seems owing. 4. A little mucilage convertible into sacclactic acid. This last ingredient seems hypothetical.

Several substances seem to be converted into manna. The juice of the common onion yields it, and it has been discovered in the juice of the melon, but not till it has fermented.

Manna appears also to be formed and deposited by insects.

Dr. Ainslie, after adverting to several kinds of manna that are met with in the East, says,

“Whether any of these mannas may be the product of the insect, which has got the appellation *chermes mannifera*, I know not; but the inquiry might be interesting. Major Macdonald Kinneir mentions, in his Geographical Memoir of Persia, p. 339, a sort of manna which the Persians call *guz*, and which may be procured in great quantities in *Louristan*, and in the district of *Khonsar* in *Irak*; he adds, that it is obtained from a shrub in appearance like a funnel, about four feet high, and is supposed to be produced by small red insects; these are seen in vast numbers under the leaves. Now this I should presume is the substance which, within the last few years, has called the attention of several scientific men of the Indian establishments; such as General Hardwick, Cap-

* Thompson's Chemistry, vol. iv. p. 30.

tain Edward Frederick, and particularly the admirable Dr. Wallich ; the last-mentioned gentleman had only seen the insect which produces it in its larva state ; though we know that the French entomologist Geoffroy had many years ago attributed to a species of *chermes*, the property of producing both in the *larva* and *pupa* state, a sugary substance of a white colour ; it appears that the animal is about the size of a domestic bug, and of a flattened oval form. Mr. Hunter informs us, that the *guz* seems to project from the abdomen of the animal in appearance like a tail, or bunch of feathers ; but perhaps more resembling snow than any thing else. The animals are found on certain trees in Persia and Armenia ; swarming in millions and generating this feathery-like substance, till it gets long and drops on the leaves, caking on them, and resembling beautiful bees-wax ; the insects do not destroy the leaves they feed on."

MEDICAL PROPERTIES AND USES.—The medical properties of manna are those of a mild cathartic, for which purpose it was formerly much used in practice. As, however, from one to two ounces of this medicine scarcely produces effects on adults, it is now seldom employed alone ; but combined with senna, neutral salts, and other purgatives, is frequently used to cover their taste. It is an innocent purgative in the hands of mothers, who frequently give it to their children in doses from one drachm to half an ounce dissolved in water ; but, though mild in its operation, it is apt to produce flatulence and griping.

OFF. PREP.—Confectio sennæ. *L. E. D.*

Enema catharticum. *D.*

Enema foetidum. *D.*

Syrupus sennæ. *D.*





Ficus curata.

Weddell sc.

London. Published for the Authors. March. 1st 1830.

A. B. del.

FICUS CARICA.

Common Fig-tree.

Class XXIII. POLYGAMIA.—Order III. TRIÆCIA.

Nat. Ord. SCABRIDÆ, Lin. URTICÆ, Juss.

GEN. CHAR. *Flowers* on the inside of a fleshy turbinate receptacle, nearly closed at the mouth.

Male. *Calyx* 3-cleft. *Corolla* 0. *Stamens* three.

Female. *Calyx* inferior 5-cleft. *Corolla* 0. *Pistil* 1. *Seeds* roundish, compressed.

SPEC. CHAR. *Leaves* 3 or 5-lobed, scabrous, bluntish, wavy or somewhat toothed. *Fruit* top-shaped, umbilicated, smooth.

Syn.—Ficus. *Raii Hist.* 2. 1431; *Bauh. Hist.* 1. 128; *Matth. Vulgr.* V. 1. 261. *f.*; *Dod. Pempt.* 812.

Ficus et Chamæficus. *Ger. Em.* 1510.

Ficus foliis palmatis. *n.* 1607. *Hall. Hist.* v. 2. 280; *Hort. Cliff.* 471; *Trew. Errht. t.* 73. 74; *Gouan Hort.* 521; *Scop. Carn.* 1251.

Ficus carica. *Lin. Sp. Pl.* 1513; *Willd. v.* 4. 1131; *Vahl. Enum.* 2. 204; *Hort. Kew*, 3. 449; *Stokes*, 4. 361; *Woodv. v.* 2. t. 130.

FOREIGN.—*Figuier commun*, Fr.; *Higuera mucko*, Sp.; *Figuera brava*, Port.; *Feigenbaum*, Ger.; *Mao hoa qua*, Chin,

THE Fig-tree is considered as a native of Asia; but has been cultivated in the south of Europe from the most remote antiquity. “It was probable,” says a late writer, “known to the people of the East before the Cerealia; and stood in the same relation to men living in the primitive condition of society, as the banana does to the Indian tribes of South America, at the present day. With little trouble or cultivation it supplied their necessities; and offered, not an article of occasional luxury, but of constant food, whether in a fresh or a dried state. As we proceed to a more advanced period of the history of the species, we still find the fig an object of general attention.

The want of blossom on the fig-tree was considered as one of the most grievous calamities by the Jews. Cakes of figs were included in the presents of provisions by which the widow of Nabal appeased the wrath of David.* In Greece, when Lycurgus decreed that the Spartan men should dine in a common hall, flour, wine, cheese, and figs, were the principal contributions of each individual to the general stock. The Athenians considered figs an article of such necessity, that their exportation from Attica was prohibited. At Rome, the fig was carried next to the wine in the processions in honour of Bacchus, as the patron of plenty and joy; and Bacchus was supposed to have derived his corpulency and vigour, not from the wine, but from the fig. All these circumstances indicate that the fig contributed very largely to the support of man; and we may reasonably account for this from the facility with which it is cultivated in climates of moderate temperature. Like the cerealia, it appears to flourish in a very considerable range of latitude; and in our country frequently produces fine fruit, without much difficulty, in the open air.”† The fig is said to have been first introduced into this country, in 1525, by Cardinal Pole; and two trees which were brought from Italy, are still in the Archbishop’s garden at Lambeth. They are of the white Marseilles kind, and bear excellent fruit. They are of extraordinary size, the trunk of one being twenty-eight, and the other twenty-one inches in circumference. In this country, fig-trees require good walls, with a south or south-east aspect; but in some parts of England, as about Worthing in Sussex, they are trained as standard trees, and produce abundance of fruit, which ripens in August and September.

The stem seldom exceeds fifteen feet in height; is branched from the bottom, and exudes, when wounded or broken, a milky juice. The branches are long, twisted, round, pliant, rough when young, and covered with an ash coloured bark. The leaves are deciduous, nearly a span in length, rough on the upper surface, petioled, and irregularly divided into three or five

* *Library of Entertaining Knowledge*, v. ii. part 2. p. 242.

† 1 Samuel xxv. 18.

lobes, of which the central one is the largest ; they are of a deep green colour above ; somewhat paler, and rather more downy beneath ; with prominent radiating ribs, one to each lobe, and many transverse reticulated veins. There is no visible flower ; for the fruit in its early stage serves as a common receptacle, containing in its cavity both the male and female florets, each of which has a proper calyx, that becomes pulpy, and invests the seed, as in the mulberry. It is turbinate, fleshy, concave, umbilicate, and nearly closed with numerous small scales near the orifice. The uppermost florets, or those near the orifice, are generally *males*, and the others, more numerous, *females*, all separately stalked. The former has the calyx divided into three segments, rarely more, which are lanceolate, erect, and equal : there is no corolla : the filaments are three, bristle-shaped, the length of the calyx, and furnished with two-lobed anthers : the pistil is a twisted deciduous rudiment only. The calyx of the female flower is divided into five deep, lanceolate, pointed, straight, nearly equal segments : there is no corolla : the germen is oval, with a tapering awl-shaped style, and furnished with pointed, reflexed, unequal stigmas. The calyx, which becomes enlarged and pulpy, contains a roundish compressed seed. The fruit is solitary, on a thick short stalk, tapering at the base, and furnished with a three-leaved involucre. It is generally of a deep purple or reddish green colour, with a fleshy, soft, and fragrant pulp. Fig. (*a*) exhibits a section of the unripe fruit ; (*b*) a section of the ripe fruit ; (*c*) represents a section of the fruit or common receptacle, studded with florets ; (*d*) green fruit, exhibiting the umbilicus ; (*e*) two views of the female florets ; (*f*) the male florets ; (*g*) the seeds, all magnified.

The varieties of the common fig are very numerous. Miller enumerates fourteen sorts as deserving of cultivation in this country ; of these the most esteemed are the Brown Ischia, the Black Ischia, the Black Genoa, the Brunswick, or Madonna, the Brown Italian, the Black Italian, and the Common Blue, or purple fig.

The *Ficus carica* in its wild state is a more humble and distorted shrub, bearing fruit of very inferior quality as to flavour ; but the parts of fructification are very perfect, and the seeds are duly ripened even in France. Such figs as are seen to fall off before they arrive at

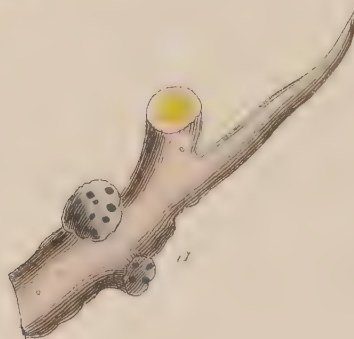
maturity, are carefully collected in the Levant, and branches of the tree are suspended by threads, above the fruit, to impregnate the female blossoms of the cultivated fig. As the cultivated fig is mostly found to contain female flowers only, the seeds would not in general be perfected, were it not for an insect, the *Cynips psenes* of Linneus, which conveys the pollen from the wild fig to the cultivated ones, and deposits its eggs within the cavity, seeming to act beneficially, not only by carrying in the fertilizing dust and dispersing it, but also by penetrating the pulp, and occasioning a dispersion of the nutritious juices. By this process, which is termed *caprification*, impregnation is not only more certainly accomplished, but the ripening of the fruit is greatly promoted. In France, caprification is imitated, by inserting straws dipped in olive oil; and in this country it has been proposed to hasten the maturation of figs, by cutting out circles of bark of the tree, thus interrupting or retarding the circulation of the sap, care being taken at the time not to injure the alburnum.

In warm climates two crops are produced annually, one upon the former year's shoots, and another on the shoots of the same year. The last of these crops is the one which is dried, which is done either by the heat of the sun, or by means of an oven. They are then packed very closely in the small chests in which they are imported into this country. In the Levant, the principal port for the exportation of figs is Smyrna. The import of figs to Great Britain alone, which is principally from Turkey, amounts to nine hundred tons annually, subject to a duty of 1*l.* 1*s.* Dried figs form also a very considerable article of commerce in Provence, Italy, and Spain; besides affording, as in the east, a chief article of sustenance to the native population. In Spain the principal exports of dried figs are from the provinces of Andalusia and Valencia; though the fruit grows, more or less, in every province. In the northern parts of France there are many fig-gardens, particularly at Argenteuil near Paris, where the culture of the fig-trees is one of the chief employments of the people.

QUALITIES, PROPERTIES AND USES.—Fresh figs, when ripe, are soft, and succulent, and, eaten with moderation, are a digestible, wholesome, and very delicious fruit. If too many be partaken of, they occasion flatulency, and sometimes diarrhœa, attended with pain. The dried fruit is too well known, both in appearance and taste, to render it necessary that we should say more than that figs consist almost entirely of mucilage and sugar.

Figs are used medicinally in what are termed pectoral or demulcent decoctions, which are the common drinks often recommended in inflammation of the first passages, and in affections of the urinary organs. Two ounces boiled in half a pint of water, and strained, form a useful gargle for inflammatory sore throat, when suppuration takes place. They are also occasionally eaten to remove habitual costiveness. The most ancient cataplasm on record, is that which was used by Hezekiah, who lived 260 years before Hippocrates. “And Isaiah said, Take a lump of figs. And they took and laid it on the boil, and he recovered.” Roasted and split, they are still employed hot, as applications to gum-boils, and other circumscribed maturing tumours.

OFF. PREP.—Decoctum Hordei Comp. L. D. Confectio Sennæ, L. Electuarium Sennæ, Comp. E.



Rorulla tinctoria



Widdell. Faint.

Cetraria islandica

ROCCELLA TINCTORIA.

Dyer's Lichen, Dyeing Rock-moss, or Orchal.

Class XXIV. CRYPTOGRAMIA.—Order IV. ALGÆ.

Nat. Ord. ALGÆ, Lin. LICHENES, Hoffm.

GEN. CHAR. *Apothecia* circular, loosely and wholly attached to the frond; gemmiparous plates forming plano-convex discs to the *Apothecia*, encircled with sessile borders formed by the frond; covering globular, but compressed masses, consisting of two layers, the upper transparent and rather gelatinous, the under blackish and compact, including nests of naked gongyli. *Frond* cartilaginous, and somewhat leathery; round or thread-shaped, also flat and shrub-like.

SPEC. CHAR. *Frond* cylindrical, solid, but little branched. *Tubercles* alternate, powdery.

Syn.—*Corraloides corniculatum fasciculare tinctoreum*, Fuci teretis facie, *Dillen.*

Musc. 120. t. 17. f. 39.

Pamelia Roccella, *Achar. Meth. Lich.* 274.

Roccella tinctoria, *Achar. Lichenogr. Univ.* 439.

Lichen Roccella, *Lin. Sp. Pl.* 1622; *Eng. Bot.* v. 3. t. 211; *Dicks. Crypt. fasc.* 3. 19.

FOREIGN.—*Orchel*, Orseille, Fr.; *Oricello*, It.; *Orciglia*. Sp.

THE Lichens constitute an extensive natural Order of plants, belonging to the class Cryptogamia, of the Linnean system; and are commonly known in this country by the popular names of *rock-moss* and *tree-moss*. By the illustrious Linneus they were included in one great, and heterogeneous genus, *Lichen*; but Dr. Erick Acharius, a learned botanist of Stockholm, has since divided the whole tribe into three distinct classes, and forty-two genera. In the plants of this Order, there are no regular roots, many of the species being attached by

small fibres issuing from the under surface of the frond, or fixed to their place of growth as if by a sort of cement. They are equally destitute of stems, and also of leaves properly so called; the part most analogous to a leaf, and which constitutes the body of the plant, being generally a crustaceous expansion, usually denominated the *frond*, and by Acharius the *thallus*. The species are very numerous; and not a few of them have at different times been employed in domestic economy, in medicine, and the arts. In Lapland, the branched corraline Lichen, *Cenomyce rangiferina*, is highly important in rural economy, as affording the food of the rein-deer. Two or three species only have been used as food by men, but several sorts are eaten by goats, and other animals. Of these perhaps the most important in a dietetic point of view is the *Cetraria islandica*, to be noticed hereafter; and a species mentioned by Professor Pallas, as growing on the calcareous mountains of the great desert of Tartary, and described by Acharius under the name of *Urceolaria esculenta*. In Siberia, the lungwort lichen, *Sticta pulmonacea* is used in the making of ale, as a substitute for hops, and *Parmelia physodes*, *Usnea plicata*, and *Ramalina farinacea*, when eaten with salt, are used in some northern countries as food. Dr. Withering tells us, that the country people in some parts of England, make an infusion of *Peltidea apthosa*, in milk, and give it to children affected with thrush, and that in large doses it excites purging and vomiting. Nor is this tribe of plants when administered internally, entirely harmless, for according to Pontoppidan, the yellow filamentous lichen, *Evernia vulpina*, is so poisonous, that it is employed for killing wolves, a carcase of some animal stuffed and smeared with the powder of it, mixed with pounded glass, being set as a bait. Several species are used for dyeing, and not a few were at one time considered as of great efficacy in the practice of medicine. Thus the common *cup-moss lichen*, *Lichen pyxidatus*, or *Cenomyce pyxidata*, Ach. was long regarded as an infallible nostrum for the whooping-cough; the common *ground-liverwort*, *L. caninus*, or *Peltidea canina*, Ach., received its specific name from the fame it had acquired as a specific in the cure of hydrophobia, and the *tree lungwort* or oak-

lungs, was equally renowned in former times for the cure of pulmonary complaints. At the present day, two species only, the *Roccella tinctoria* and *Cetraria islandica*, the subjects of the following article, are retained in the list of the British Pharmacopœias.

The Orchal or Archil, *Roccella tinctoria*, is an indigenous Lichen, found sparingly on the maritime rocks of the south of England, particularly in Portland Island, and grows very abundantly on the sea rocks of the Cape Verd, and also of the Canary islands; and from both clusters it is exported in considerable quantities. In France, it is called *Orseille*, and is used to a considerable extent in the southern provinces for dyeing silks, being collected on the rocky shores of the Mediterranean. By the Dutch, it is manufactured into a paste called by them *Lacmus*, or *Litmus*. This is sold in square masses about an inch in length, and half an inch in breadth, and thickness; hard and brittle, having the appearance of a violet coloured earth with white spots. The plant seldom exceeds two inches in height; it is firmly fixed to the rocks, and sends up a thick tuft of slender worm-like stems, round, pointed, often curved, more or less branched, smooth, of a white, grey, or brownish hue, studded about their upper part with numerous scarlet tubercles, or wart-like excrescences, replete with a white powder, which have been regarded by Hedwig, as pollen or seeds, and by Gertner and others as a peculiar sort of germs or buds. The latter opinion has been established by Acharius, and lichens are now considered as gemmiparous plants, propagated only by bud-knots, or gongyli.

Although many other species afford colours, this is the most valuable lichen as a dye-stuff. If we may credit Tournefort, it was known to the ancients, being the *Λεικη* of Dioscorides, and the *Phycos thalassion* of Pliny. It was collected in the islands of the Archipelago, and from one of these acquired the name of *Purple of Amorgus*. In modern times, according to Berthollet, it was prepared as an article of commerce at Florence, the fine violet colour which resulted from mixing it with urine, having been accidentally observed by a Florentine merchant, about the year 1300, while visiting the Levant. The persons by whom

the *archil* or *litmus* was formerly prepared, desirous to keep it a secret, gave it the name of *tincture of turnsole*, pretending that it was extracted from the turnsole, *Heliotropium europeum*. It is now well known in this country, and large manufactures of it are carried on in London and Liverpool. The Lichen is imported to us as it is gathered, and is prepared in the following manner.—The plant is first dried, cleansed, and pulverized in a mill like the oil-mill. The powder is then thrown into a trough, with one half its weight of pearlash; is moistened with a little human urine, and then allowed to ferment. This fermentation is kept up for some time by successive additions of urine, till the colour of the materials first changes to a purplish red, then to blue. In this state, it is mixed with a third of its weight of very good potash, and spread upon deep wooden trays till dry. A quantity of chalk is added at last, apparently for the mere purpose of increasing its weight. It may here be remarked, “that another species of *Roccella*, *R. fusiformis*, is reported to vie in richness of colouring matter with the common orchal, while the plant attains to a much larger size. This species, like the former, occurs sparingly on the sea rocks of the south of Europe; but it is said to abound in the East Indies, especially on the shores of Sumatra, and might deserve the notice of some of our enterprising countrymen.”

Prepared archil, which has a violet odour, derived from orris root, very readily gives out its colour to water, to volatile spirits and alcohol, and is the substance principally made use of for colouring the spirits of thermometers. As exposure to the air destroys its colour upon cloth, the exclusion of the air produces a like effect in hermetically sealed tubes, the spirits of large thermometers becoming in a few years colourless, and the colour being again restored by the admission of air. Archil stains marble in a beautiful manner; and by the addition of a little solution of tin, this drug gives a durable dye of a scarlet colour.

MEDICAL PROPERTIES AND USES.—We know of no medicinal virtues possessed by this lichen, though it was employed at one time for relieving pulmonary complaints.

Litmus is used in chemistry as the most delicate test, either

by staining paper with it, or by infusing it in water ; which will presently turn red by acids, and have the blue colour restored by an alkali.

CETRARIA ISLANDICA.

Iceland Lichen or Eryngo-leaved Liverwort.

Pl. 69.

GEN. CHAR. *Apothecia* roundish, plano-concave, attached obliquely to the margin of the thallus, and therefore loose beneath, elevated and bent inward at the circumference ; gemmiparous plate surrounded by a projecting border formed by the thallus ; within of simple texture, or slightly celluliferous. *Frond* membranaceous, foliaceous, irregularly laciniated, smooth below.

SPEC. CHAR. *Frond*, olive-brown, bright reddish or pale at the base ; lobes suberect, irregularly linear, multifid, channelled, fringed or toothed, the fertile ones dilated. *Apothecia* sessile, flat, of the same colour as the frond, with a raised entire border.

Syn.—*Lichenoides rigidum*, *eryngii folia referens*, *Raii Syn.* 77 ; *Dill. Musc.* 209, t. 28. f. 111.

Lichenoides islandicum. *Hoffm. Plant. Lich.* t. 9. f. 1.

Physicia islandica, *Michaux Fl. Bor. Amer.* 2 p. 326.

Ceteraria islandica, *Achar. Meth. Lich.* 293.

Lichen islandicus, *Pharm. Lōnd. Ed. Dub.* ; *Lin. Sp. Pl.* 1611 ; *Achar. Prodr.* 170 ; *Eng. Bot. v. t.* 1330 ; *Jacq. Coll.* 4 t. 8. f. 1 ; *Fl. Dan.* t. 153 ; *Grev. Fl. Edin.* 340.

FOREIGN.—*Lichen d'Islande*, *Fr.* ; *Lichene Islandico.* *It.* ; *Lichen de Islanda Sp.* ; *Musco da Islanda*, *Port* ; *Isländisches Moos*, *Ger.* *Yslandsch Mos*, *Dut.* ; *Islands Moos*, *Dan.* ; *Islandsmossa*, *Swed.*

THIS species of Lichen is a native of the mountainous heaths and woods in the alpine parts of Britain. The late Sir J. E. Smith gathered it on the Pentland Hills, near Edinburgh, on Ben Lomond, and various parts of Scotland. It occurs in all

the heaths and mountains of the north of Europe, and Dr. Holland informs us that it grows abundantly on the lava on the western coast of Iceland, where the whole plant is more luxuriant than with us. Although this plant is more or less common in all arctic countries, no mention is made of it by Wahlenberg, in his interesting account of the physical distribution of vegetables in Lapland.*

The Iceland Moss seldom exceeds three inches in height, and is erect and bushy. The fronds form loose elegant tufts; they are membranous, somewhat cartilaginous, channelled below, variously sinuated, and lobed; the lobes being irregularly divided, notched, and fringed at the margin with hairs. The surface of the whole vegetable is smooth, shining, of a rich chesnut brown colour, with a green tinge when wet, paler underneath. In such plants as grow in the shade the colour is a pale brownish green. The fructification or shields, are dark chesnut, large, polished, flat, without any border, growing close to the upper surface of the frond.

QUALITIES AND CHEMICAL PROPERTIES. — *Cetraria islandica* is inodorous; is mucilaginous, tough, and bitter. When dry it differs little in appearance from the recent plant. It yields all its medical virtues to boiling water and infused in rectified spirit, affords by evaporation, a very small quantity of resin.

Subjoined is a curious analysis by Berzelius.

Syrup	3	6
Bi-tartrate of Potass, with some tartrate and phosphate of lime.....	1	9
Bitter principle	3	0
Green wax	1	6
Gum	3	7
Extractive colouring matter	7	0
Starch.....	44	6
Starchy insoluble matter	36	6

101 6

ECONOMICAL USES.—The esculent properties of the Iceland moss are well known in many districts on the continent of Europe. Of late years it has been proposed to use it, either alone,

* Linneus' Lapland Tour, by Smith.



Helminthocortos

vesiculosus

FUCUS VESICULOSUS.

Bladder Fucus. Bladder-wrack.

Class XXIV. CRYPTOGRAMIA. Order III. ALGÆ.

Nat. Ord. ALGÆ.

ESS. CHAR. *Seeds* produced in clustered tubercles, which burst at their summits.

SPEC. CHAR. *Fron*d coriaceous, flat, linear, dichotomous, entire, with a central rib; vesicles innate in pairs, receptacles distinct, terminal, turgid, mostly elliptical.

Syn.—*Fucus* sive *Alga marina latifolia vulgatissima*, *Raii Syn.* p. 40. n. 4.

Alga sive *fucus*, *Quercus marina dictus*, *Baster, Op. Subs.* 2. p. 4. 116. t. 11. f. 2.

Quercus Marina, *Gmel. Hist. Fuc.* p. 60.

Fucus vesiculosus, *Lin. Sp. Pl.* v. 2. p. 1626; *Eng. Bot.* v. 15. t. 1066;

Wither. Bot. Arr. v. 4. p. 84; *Esper Icon. Fuc.* 1. p. 33. t. 12; *Fl. Fr.* ed. 2da, 2. p. 18; *Turner Hist. Fuc.* v. 2. p. 44. t. 88; *Hook. Scot.* p. 95.

β. *spiralis*; frond twisted in a spiral manner, vesicles none, receptacles roundish.

F. spiralis, *Lin.*; *Eng. Bot.* t. 1685.

γ. *volubilis*; frond spirally twisted; vesicles generally wanting; apices long, elliptical. *Raii Syn.* 42. n. 6.

δ. *acutus*; frond narrow, producing vesicles; apices long, lanceolate. *F. spiralis*, *Esp.*

ε. *angustifolius*; frond narrow; vesicles mostly wanting; receptacles sub-pedunculated, long, between linear and lanceolate, acuminate. *F. longifructus*, *Fl. Fran. ed. 2da*, 2 p. 19.

ζ. *Sherardi*; frond narrow, dwarfish; vesicles none; receptacles short, oblong.

F. Sherardi, *Stackh. Ner. Brit.* p. 72. t. 13.

η. *linearis*; frond narrow, dwarfish; vesicles none; receptacles long, between linear and lanceolate. *F. Quercus Marina*, *Gmel. Hist. Fuc.* p. 2.

UNDER the term FUCI are comprehended a tribe of plants, commonly included with the Ulvæ and marine Confervæ, under the more general title of submerged Algæ, or Thalassiphyta, and well known in this country by the popular name of Sea-weeds. In Scotland the name Wrack, (probably from the French *varec*.)

is often applied to those fuci, which are cut on the shores for the manufacture of kelp. In the sexual system, the fuci form part of the third order Algæ, of the last class Cryptogamia. The word fucus (*φοκος*), which signifies paint, may be supposed to allude to the quality possessed by some of the small reddish species, of affording a sort of rouge. They are marine plants, either floating free in the water, and destitute of roots, or attached by a fibrous or scutate base. Their texture is fibrous, mostly coriaceous, sometimes gelatinous or membranaceous; often branched or shrub-like, and traversed with a longitudinal nerve or midrib. They produce seeds or sporules, either immersed in the frond, or in capsules or tubercles, variously situated; and most of them are furnished with air vesicles.

The economical uses of sea-weeds are numerous and important. To the agriculturist, they furnish a valuable manure. To the glass-maker and soap-boiler they yield the fixed alkali, and the manufacture of kelp for this purpose has become a valuable source of revenue to the proprietors of the rocky shores of Europe, particularly of Britain, and more especially of those of the Northern and Western Islands of Scotland. From the ashes of the fuci the chemist has of late years derived the very curious elementary substance named *iodine*. Several of them are so rich in saccharine matter and vegetable mucilage, that on the shores of the northern countries of Europe, and the Scottish islands, much of the winter provender of cattle is derived from them. A few of them also afford food to man; some of the smaller sorts are used as condiments; while others are employed as medicines.

The *Fucus vesiculosus* is a perennial plant, growing every where on the British shores, on rocks and stones, or cast up on the beach; bearing its fructification in the spring. The root is an expanded, black, woody, callous disc. The frond is smooth and glossy, flat, winged, from one to four feet long, and from half an inch to an inch and a half wide, linear, forked near the root, and afterwards repeatedly dichotomous, of a dark olive-green colour, becoming paler near the apices, and when dry black and dull. All the branches are nearly of equal height, with the apices

rounded, and not unfrequently notched; the margins entire. The substance of the frond is coriaceous, flexible and tough, but brittle after it is dried; and through its whole length furnished with a midrib of a blackish colour, and as thick as a goose-quill, but gradually growing pale and thin. In the membranous part of the frond throughout its whole length are found immersed spherical vesicles, varying in size from a pea to a hazel-nut, externally smooth, and containing in their cavity a quantity of air. Besides these, particularly in the spring, almost always near the apices, are often observable elliptical swellings of a pale yellowish green colour, an inch or two in length, and sometimes occupying the midrib, so that the whole becomes inflated and nearly cylindrical. The fructification consists of compressed, turgid receptacles, solitary or twin, placed at the ends of the branches, varying in form, but mostly elliptical, from one-fourth of an inch to two inches long, and perforated with very minute pores, under which lie imbedded spherical tubercles, composed of short jointed fibres, mixed with seeds of an elliptical form, surrounded with a pellucid limbus, and appearing under a powerful microscope to contain six or seven roundish grains: the centre of the receptacle is filled with a colourless and tasteless mucus, through which passes a network of anastomosing fibres. The varieties α . β . γ . and δ . are found upon the shores of the British isles, and of all the north of Europe, plentifully.—Fig. (*a*) part of the outside of a receptacle magnified; (*b*) horizontal section of a receptacle; (*c*) tubercle; (*d*) seeds; (*e*) contents of a seed; (*f*) some of the same; (*g*) longitudinal section of a vesicle.

In Scotland this is sometimes called *Black Tang*; sometimes *Kelp-ware*, and when the receptacles are large and swollen, *Strawberry-ware*. The Norwegians call it *Kue-tang*. It is the *Quercus Marina* or *Sea Oak* of the older writers.

QUALITIES AND CHEMICAL PROPERTIES.—The most important uses to which *Fucus vesiculosus* is applied is in the manufacture of *Kelp*, which is a very impure carbonate of soda, containing sulphate and muriate of soda, and also sulphuret of soda, with a portion of charcoal; and is manufactured in Scotland chiefly in the months of July and August. The kiln in which it is made is a round pit or basin dug in the sand or earth on the beach, and

surrounded with a few loose stones. In the morning a fire is kindled in the pit, generally by means of peat or turf. This fire is generally fed with sea-weed, in such a state of dryness that it will merely burn. In the course of eight or ten hours the furnace is found to be nearly full of melted matter. Iron rakes are then drawn rapidly backward and forward through the mass in the furnace in order to *compact* it, or bring it into an equal state of fusion. It is then allowed to cool, when it is broken into pieces, and carried into a storehouse, to remain till shipped.

The fuci which are chiefly used on our shores are the *Fucus vesiculosus*, *nodosus*, and *serratus*. In some places, *F. loreus* and *filum* are employed, but not to any extent. By means of a boat and long sharp hooks, *F. digitatus* is cut in some places, and this species, together with *F. saccharinus*, *bulbosus*, and *esculentus*, form much of the drift-ware employed in making kelp. Some of them are no doubt richer than others in the alkali, but when fit for burning they are all capable of yielding about one-fifth of their weight in kelp.

Iodine, as already hinted, is also yielded by kelp. Its name being derived from *ιωδες*, *violaceus*, in allusion to the very striking circumstance of its yielding a violet-coloured gas on being exposed to an increase of temperature. It was first discovered accidentally by M. Courtois, a manufacturer of nitre in Paris, and its properties have been since accurately examined by Clement and Desormes, Gay Lussac, Sir H. Davy, Vauquelin, and Wollaston. The latter was the first who gave a regular formula for extracting it; he dissolved the soluble part of kelp in water, and after evaporating it as long as it continued to afford crystals, he added a little more sulphuric acid to the remaining liquid than was necessary to neutralize the free soda which it contained, and after all action had ceased, he added as much black oxide of manganese to the clear liquor which remained, and on the application of heat, iodine was disengaged. The soap manufacturers obtain their principal supply of soda from kelp; and Dr. Ure found, that a very large quantity of iodine may be obtained from the brown oily liquid which remains after most of the soda has been abstracted from the kelp-ley. A basin is filled about one-half with this liquid, after it has been

heated to 230, and for every eight ounces about one ounce of sulphuric acid is added, previously diluted with its own bulk of water; a violent effervescence immediately ensues; sulphur is deposited, while sulphureted hydrogen, sulphurous, carbonic, and muriatic acids are disengaged; and on cooling, crystals are deposited, consisting principally of the sulphate of soda. The liquid is filtered, put into a glass retort, and to every twelve ounces, one thousand grains of the black oxide of manganese are to be added; heat is now to be applied, and the iodine rises in a rich purple vapour, which condenses in crystalline plates. It is collected by adapting a receiver to the retort, from which it is easily withdrawn by a little water.

Iodine then is a solid substance of a bluish-black colour and metallic lustre. It is soft and friable, and is obtained generally in the form of small scales, sometimes in rhomboidal plates, and even in elongated octohedrons; it does not conduct electricity. It has a pungent odour, an acrid taste, and stains the skin of a deep brownish-yellow colour; when taken in considerable quantity, it acts as a strong poison. It evaporates at the ordinary temperature of the atmosphere, melts at 227, and is sublimed at 350. When mixed with water it passes to the gaseous state along with its vapour at a boiling temperature. It is soluble in alcohol and ether, but sparingly so in water; its solutions have an orange-brown tint, destroying the vegetable colours. *Starch* is the most delicate test of iodine, forming a compound of a very rich blue colour, when added to any solution which contains it in an uncombined state. In its general properties it bears a great analogy to chlorine, and like it, is always attracted to the positive pole of the galvanic battery, when disengaged from its combinations with the metals or other inflammable bodies. The specific gravity of iodine is 4.941, and that of its vapour 8.678, 100 cubic inches weighing about 270 grains.

Iodine is considered by the most eminent chemists to be a simple body. It forms with oxygen the *iodic acid*, and with chlorine the *chloriodic acid*. *Iodates* are prepared either by the direct addition of iodic acid to salifiable bases, or by the action of iodine on these substances in water. Thus the iodate of potash is obtained by pouring a solution of potash on a fixed quantity of

iodine, till it loses colour. Now part of the water is decomposed; its hydrogen combines with one portion of iodine, and forms hydriodic acid, while oxygen at the same time unites with another portion, and forms iodic acid; these two acids combine with the potash, and we thus obtain a mixed solution of *iodate* and *hydriodate of potash*. This solution is then evaporated to dryness and digested in alcohol, which dissolves the *hydriodate*, and leaves the *iodate*, which is insoluble in alcohol. The supernatant liquor being poured off and evaporated, the *hydriodate* is obtained, and is very soluble in water.

MEDICAL PROPERTIES AND ECONOMICAL USES.—The *F. vesiculosus* is well known as an excellent manure for land, to which purpose it is often applied in the maritime parts of Scotland and other countries. In the islands of Jura and Skye it serves as a winter food for cattle, which regularly come down to the shores at the recess of the tides to seek for it. Linneus informs us that the inhabitants of Gothland boil it in water, and mixing a little coarse meal or flour, feed their hogs with it; for which reason they call the plant *swine-tang*. And in Scania, he says, the poor people cover their cottages with it, and sometimes use it for fuel.

Its medical virtues have been much celebrated by Dr. Russell in his Dissertation concerning the uses of Sea-water in the Diseases of the Glands. He found the saponaceous liquor or mucus in the vesicles of the plant to be an excellent resolvent, and useful in dispersing scrofulous swellings. He recommends the patient to rub the tumour with these vesicles bruised in the hand, and afterwards to wash the part with sea-water. But the most beneficial use to which the *F. vesiculosus* is applied is in making kelp, already mentioned: a work much practised in the Western Islands.

Dr. Coindet, of Geneva, suspecting from analogy that *iodine* was the active principle in sponge, was induced to try it in those cases for which burnt sponge was administered, and his success in the treatment of bronchocele was very remarkable. It has been used by many practitioners both on the continent and in our own country, with undiminished reputation. Success is most commonly to be expected in recent cases, and when the patient is young; several instances have, however, occurred, in which old, hard, and very large goîtres have yielded

to this remedy; but in such instances as the course of treatment is protracted, it may have injurious effects on the stomach; to obviate which it has been the object to introduce the remedy by means of friction; and a case is recorded by Mr. Rickwood, where a patient was cured at the age of seventy years. Iodine has been likewise employed in the treatment of scrofula with equal success; and in the hands of M. M. Hufeland and Osan, the efficacy of the tincture of iodine, and hydriodate of potass have been fully proved; they have also employed the same preparations with advantage in scirrhus and cancer of the uterus. Dr. Wagner speaks of its beneficial influence on a tumour situated in the neighbourhood of the jaw, which he considered cancerous; and Dr. Hanemann is satisfied that iodine exerted a remarkable influence on cancer of the uterus in the most advanced stage.

There seems to be no reason for doubting that this new remedy exerts a very marked influence over scrofulous and adventitious deposits. We have therefore numerous and well attested cases of its successful employment in an immense number of diseases, such as white-swelling, deafness, paralysis, distortion of the spine, &c. Professor Maunoir states, that a child laboured under a considerable white swelling of the knee, and could not walk without crutches. The usual modes of treatment proving unavailing, the tumour was rubbed night and morning with iodine ointment, while the tincture was given internally in small doses. After a few weeks a perfect cure took place.

If iodine be taken in doses too large, or be not properly watched as to its effects, it is apt to produce inflammation of the stomach, attended by nausea, incessant vomiting, and general emaciation; while the testes and mammæ diminish in a remarkable manner. These facts, however important to be known, do not in the least militate against the judicious employment of a remedy, that should be viewed as a valuable boon, by every scientific physician; for we have the names of Dr. Gardner, Dr. De Carro, Dr. Roots, Dr. Baron, Mr. Austin, and many other eminent names, who, closely watching its effects, in well-regulated doses, consider it as a remedy easily to be managed; and in our own practice, we continually employ it with perfect satisfaction, not only as a safe, but very efficacious agent.

Dr. Baron has employed it with some success in the treatment of scrofulous phthisis, and other tuberculous affections; and the late Mr. Haden also reports a case of phthisis supposed to have been cured by iodine. Cases are also recorded of its success in ovarian dropsy. Dr. Coindet praises it as a powerful emenagogue; an opinion which has been confirmed by Professor Brera and other physicians. In fact, that gentleman has employed the remedy very extensively. Besides bronchocele, and suppressions of the catamenia, which have been cured by it, he mentions several cases of indurated glands, tabes mesenterica, chronic dysentery, and hæmoptœ, supervening to suppressed menstruation; laryngeal phthisis, leucorrhœa, syphilitic enlargements, &c. as having been also cured by it. Mr. Callaway, surgeon to Guy's Hospital, confirms its success in scrofulous cases and in enlarged mesenteric glands. M. Magendie informs us that he gave iodine in a case represented to him to be suppressed catamenia, and at the end of three weeks abortion was the result!

It will be seen from this account, that the value of iodine as a remedial agent in a vast variety of important diseases, does not rest on the testimony of one or two individuals only; but that its employment is established through the concurrent testimonies of many eminent men in different countries; and we have chosen rather to bring together *many facts*, than to speculate on its mode of action, or to recommend it for particular diseases. It must be borne in mind that it is a *new remedy*, and although we can administer it with precision in many cases, and with the greatest confidence as to its results, we should view it still as an agent, which has powerful claims to our attention rather as a novel remedy, than as one of which we have ascertained the limits of its applicability. The following are the most useful preparations:—

TINCTURE OF IODINE.

Take of, Alcohol at 35° 1 ounce.*

Iodine . . . 48 grains.—Mix.

This tincture, says M. Magendie, is less frequently employed than the two following preparations. It is given in doses of from four to ten drops, three times a day, in a glass of sugared

* An ounce is 7 drachms, 52½ grains, Troy weight.

water, or infusion of liquorice; the doses may be gradually augmented to twenty drops.

IODURETTED SULPHURIC ETHER.

Take of, Sulphuric ether 1 gros.*
Pure iodine . 6 grains.—Dissolve.

Thirty drops contain one grain of iodine, and the patient can scarcely bear more than ten drops at a time.

SOLUTION OF HYDRIODATE OF POTASS.

Take of, Hydriodate of Potass 36 grains.
Distilled water . . 1 once.—Dissolve.

These two preparations, whose mode of exhibition is the same as that of the tincture of iodine, are employed, as well as it, in the treatment of bronchocele and scrophula; in the latter case some tonic is generally combined. M. Magendie states, that the solution of the hydriodate of potass may be gradually increased to three *gros* a day, without unpleasant consequences; debilitated and very nervous women have taken it in this quantity, for many weeks, without any derangement of function: with this dose two cases of cancer of the tongue recovered in the space of a fortnight, in the incurable wards of L'Hospice de la Salpêtrière.

OINTMENT OF HYDRIODATE OF POTASS.

Take of, Hydriodate of potass $\frac{1}{2}$ gros.
Spermaceti ointment $1\frac{1}{2}$ once.—Mix.

A small piece of this ointment may be used night and morning, in the way of friction upon enlarged glands. At the end of a week it may be increased in quantity, according to the age of the patient and extent of the tumour. Sometimes, by these means, the complete resolution of tumours is effected, which could not be removed entirely by saline solutions. Occasionally it is necessary to apply leeches likewise to the indurated glands.

There are some other preparations occasionally employed, such as the iodate of zinc, iodurets of mercury, &c.; for accounts of which the curious reader may consult Houlton's Translation of "Magendie's Formulary."

* The *gros* is 59 grains.

FUCUS HELMINTHOCORTOS.—*Corsican Worm-moss.*

SPEC. CHAR.—*Fronds* cartilaginous, cylindrical, capillary, growing in matted tufts, jointed, irregularly dichotomous; apices acuminate. *Capsules* hemispherical, scattered, lateral, sessile.

Syn.—*Conferva Helminthocorton*, *Lin. Syst. Nat. Gmel. v. 2. p. 1394.*

Fucus Helminthocortos, “*Hæmmerten, Dis. cum icone*” *teste Rothio Fl. Fr. ed. 2da ii. p. 37.*

Ceramium Helminthocortos, *Roth. Cat. Bot. ii. p. 168. iii. p. 157.*

THIS small species is found growing in the Mediterranean sea, on the coast of Corsica, attached to calcareous rocks and other marine bodies. The root is wholly composed of creeping fibres, variously branched and thickly interwoven. The fronds are very numerous, from the same base, clustered into compact, cushion-like tufts, some inches in width, an inch or an inch and half long, erect, straight, or slightly flexuose cylindrical, not thicker than hog’s bristles, once or twice irregularly dichotomous at short intervals, with erecto-patent segments of nearly equal height, all remarkably acuminate. The fructification consists, according to Dr. Roth, of small, hemispherical capsules, sessile upon the sides of the branches, solitary, generally few in number and remote from each other; when young composed of a very thin membrane, white and pellucid; when old, their surface becomes unequal as if tubercled, and in the midst is discernible a small membranaceous pellucid vesicle: colour, light reddish-brown, semi-transparent, turning white if long kept in fresh water, and darker when dried: substance, cartilaginous, inclining to horny, tough, and flexible. On the plate (No. 108) we have given a tuft of *F. Heminthocortos* of the natural size. (a) A single frond magnified; (b) part of the same.

MEDICAL PROPERTIES AND USES.—This plant though almost entirely unknown among the practitioners of this country, has long been celebrated on the continent, and is there in common use as a vermifuge, under the name of the moss or the Corraline of Corsica. It has also been recommended as a remedy in cancer!

or mixed with flour, in the composition of bread in those districts where flour is scarce. The Saxon Government lately published a Report on this subject, which is full of information interesting to those mountainous districts, where this plant abounds. In this report, we are informed, that 6 pounds and 22 *loths* of lichen meal, boiled with fourteen times its quantity of water, and baked in this state with $39\frac{1}{2}$ pounds of flour, produced $111\frac{1}{2}$ pounds of good household-bread. Without this addition, the flour would not have produced more than $78\frac{3}{4}$ pounds of bread, consequently, this addition of 6 pounds and 22 *loths* of lichen meal occasioned an increase of $32\frac{5}{6}$ of good bread. It is known that three pounds of flour yield four pounds of household bread. One pound of lichen meal, added in the form of paste, gives an addition of nearly 6 pounds, and therefore is equivalent in this view to about $3\frac{3}{4}$ pounds of flour, because it affords $3\frac{1}{2}$ times more bread than this. But at present, nearly all the Iceland Moss collected in Germany, is sent through Hamburgh to this country, where it is used in brewing, and in the composition of ship-biscuit, whereby they are not attacked with worms, and suffer little from the action of sea-water.

Dr. Ebeling, in his thesis, recommends it first to be infused in boiling water, with a view to its being thoroughly cleansed; while by the same means, it will be deprived of a considerable part of its original bitterness. The lichen, thus prepared, is to be boiled, and the mucilage so obtained from it, to be used either as an article of diet, or of medicine; and we have it in our power to render it exceedingly palatable by the addition of a little white wine, when that can be given with propriety; or when wine is not admissible, by the addition either of milk, honey, or the syrup of lemons.

MEDICAL PROPERTIES.—Iceland Moss was first recommended by Linneus as a popular remedy in Sweden, for coughs. Scopoli afterwards published his observations on it, but it excited little attention in this country, till Dr. Regnault's treatise on consumption appeared, in which its virtues are very highly extolled. According to Bergius, the lichen in its recent state is "*eccoprotica*," and when dried, "*nutriens, pectoralis*." In the *Dispensatorium Fuldense*, it is said to be "*astringens, roborans, humectans, invis-*

cans, nutriens, antiseptica.” It is not, however, used on the Continent, indiscriminately, in every species of phthisis, nor in every stage of that disorder. It is chiefly recommended in those instances where the cough is attended with purulent expectoration ; in cases preceded, or accompanied by hæmoptysis, in incipient phthisis, when from relaxation there is an increased discharge of mucus from the bronchiæ ; in the sequelæ of measles, attended by a quick small pulse, pain of the breast, emaciation, violent cough, and purulent expectoration. The use of it is forbidden when vomicæ are already formed, and proceeding towards ulceration ; in dyspnœa, and when there is an increased action of the vessels, with diminished expectoration. Neither has the *Cetraria islandica* been confined to phthisical cases ; it has been recommended in malignant fevers, dysentery, and hæmatemesis ; as an enema in hæmorrhoids ; and as an injection in gonorrhœa. In the recent state, it is boiled in milk, and frequently used by the peasants as a cathartic, and to expel worms. The most usual form of exhibiting this remedy on the continent is by boiling it in milk, or when it disagrees with the stomach, in water. Scarcely any of the authors, however, who have published on it, appear to have trusted to it solely, but have generally united it with squills, opium, cinchona and other active remedies. Iceland Moss has owed much of its celebrity to the prevalence of the humoral pathology ; for, as it consists of mucilage united with a bitter, it was supposed that the first principle would render it powerful in inviscating acrimony ; and the second in gently constringing and corroborating the muscular fibres of the stomach. The decoction as ordered by our pharmacopœias, is so bitter as to prevent many from taking it ; and when deprived of its disagreeable taste, it can only be viewed as a demulcent, equal in effects to linseed, quince seed, and marsh-mallows. Iceland Moss certainly does not cure phthisis pulmonalis, but in the last stage of that disease, when solid food is oppressive, and the diarrhœa appears to be kept up by the acrid contents of the stomach and bowels, it has appeared to us, to check the latter, and to impart both vigour, and nourishment, to the digestive organs.

OFF PREP.—Decoctum Lichenis Island. L. E. D.



Amanita muscaria.

G. Reiz, del.

London, Published for the Author.

Waddell sc

AMANITA MUSCARIA.

*Fly Amanita.*Class XXIV. CRYPTOGRAMIA.—Order IV. FUNGI, *Lin.*Nat. Ord. FUNGI, *Link. Grev.*

GEN. CHAR. *Pileus* furnished with a stem and *volva*, and bearing on its inferior surface straight sporiferous *lamellæ*. *Stem* either with a ring-like veil, or naked.

SPEC. CHAR. Margin of the *pileus* striated, shining, warty, rarely naked; *warts* and *lamellæ* white; *volva* vanishing, scaly; *stipes* bulbous.

Syn.—*Agaricus rubens.* *Scop. Fl. Carn. p. 416.*

Agaricus pseudo-aurantiacus. *Bull. Camp. t. 112.*

Agaricus nobilis. *Bolt. Fung. t. 46.*

Agaricus imperialis. *Batsch. p. 59; Fl. Dan. t. 1129.*

Fungus bulbosus e volva erumpens, &c. *Mich. Nov. Pl. Gen. p. 118. t. 78. f. 2.*

Agaricus muscarius. *Lin. Fl. Suec. 1235; Hall. Hist. 2375; Schæff. Fung. t. 27; Huds. Angl. 2. p. 612; With. Bot. Arr. ed. 6. 4. p. 234; Bolt. Fung. 1. t. 27; Sow. Fung. t. 286; De Cand. Syn. p. 42; Purt. Midl. Fl. v. 2. p. 630; v. 3. p. 200; Fries. Syst. Mycol. v. 1. p. 16.*

Amanita muscaria. *Pers. Syn. Fung. p. 253; Wahl. Fl. Lapp. p. 527; Lam. Dict. v. 1. p. 111; Gray's Nat. Arr. v. 1. p. 600; Hook. Scot. pt. 2. p. 19; Grev. Fl. Edin. p. 369; Ejus. Crypt. Fl. v. 1. t. 54.*

MANY species of this order are used as food, or rather as condiments; and several of them are known to rank among the most active of the vegetable poisons. Accidents, arising from the poisonous Fungi being taken through mistake for the esculent mushrooms, are frequent both in this country and on the continent, especially in France, where many species are eaten that are rejected by us. Almost the only ones in use in this country are the *Agaricus campestris* and *oreades*, the *deliciosus*,

which the ancient Romans esteemed the greatest of luxuries, the truffle, and the morel. Even some of these, under certain circumstances, have proved injurious, if not poisonous; hence the greatest caution is requisite in selecting any species of this tribe for food. Haller informs us, that the Russians eat the whole race, using the poisonous ones as means of intoxication. It appears, however, that these are used after a process of fermentation, so that their noxious effects are, probably, diminished. The poisonous species found in this country have not been correctly determined; those most commonly fatal are *Amanita muscaria*, and its varieties; the *Agaricus semiglobatus*, and *Agaricus globosus*.

The *Amanita muscaria* is one of the largest, and most beautiful of the Agaric tribe, and really deserves the name of “imperial,” applied to it by Batsch; “for the most indifferent person must be attracted by the glowing hues of its ample pileus its regular form, tall pillar-like stipes—extremely conspicuous, even at a distance, in the shaded recesses of its native woods.” It is found in woods throughout the whole kingdom, and is extremely abundant in the Highlands of Scotland.

The pileus is from three to six inches in diameter, convex at first, at length nearly quite flat, striated at the margin, varying very much in colour, being mostly bright red or orange, but sometimes liver-coloured, yellowish, or even whitish, and beset with downy, angular warts. The warts are white, or yellowish, prominent, pretty regular, scattered over the surface, but sometimes wanting. The lamellæ are flat, adnate with the stipes, very numerous, broad, and whitish. The flesh is thick, and white, partaking to a small depth of the colour of the pileus. The stipes is cylindrical, smooth, white, very straight, subsolid, from four to eight inches high, and bulbous at the base. The volva, according to Dr. Greville, is perfect only in extremely young plants, cracking immediately into pyramidal warts, which become less elevated, and more distinct, as the pileus expands, and generally leave a few traces upon the bulb, at the base of the stem.—PLATE CLXIV. exhibits three of the most striking varieties.





Amanita muscaria, var.

G. Reid. del.

W. G. Smith. sculp.

London, Published for the Authors, June 1830.

Fl. 165.



Agaricus semiglobatus.

W. D. D. del.

W. D. D. del.

London. Published for the Authors. June 1831.

AGARICUS SEMIGLOBATUS.

*Hemispherical glutinous Agaric.**Class XXIV. CRYPTOGRAMIA.—Order IV. FUNGI, Lin.**Nat. Ord. FUNGI, Link. series V. Tribe XXXII. PSALLIOTA, Fries.*

GEN. CHAR. *Pileus* furnished with a *stipes*, or fixed by its side, bearing on the under surface straight, simple, sporideferous *lamellæ*. *Volva* none.

SPEC. CHAR. *Pileus* hemispherical, smooth, glutinous, reddish, or greenish-yellow. *Lamellæ* fixed horizontally to the *stipes*, mottled with black. *Stipes* hollow, glabrous; ring indistinct.

Syn.—Fungus minor ex albido subluteus pileo hemispherico. *Raii Hist.* 2. p. 97. t. 5.

Agaricus glutinosus. *Curt. Fl. Lond.* v. 2. t. 144.

Agaricus nitens. *Bull. Champ.* t. 566.

Agaricus præcox. *Schum. Fl. Scell.* p. 315.

Agaricus virosus. *Sow. Fung.* t. 407. f. 3. 4. 5. et t. 408. f. 12. 13. 14; *Purt. Midl. Fl.* v. 2. p. 646.

Agaricus semiglobatus. *Batsch. Fung.* p. 141. t. 21. f. 110. *Sow. Fung.* t. 248; *Pers. Syn. Fung.* p. 407. *With. Bot. Arr.* v. 4. p. 330; *Hook. Scot.* pt. 2. p. 23. *Grev. Fl. Edin.* p. 391; *Crypt. Fl.* v. 6. t. 344; *Fries Syst. Myc.* v. 1. p. 391.

THIS is one of the most common, and, if Messrs. Brande and Sowerby's account be correct, the most deleterious of the Agaric tribe. It occurs in most parts of the kingdom, in exposed and elevated pastures, moist meadows and woods, from May to September. Dr. Greville says it is extremely common in Scotland; and Mr. Curtis found it in great abundance about Peckham, Hornsey, and other places near London.

It generally grows singly, but sometimes springs up in clusters, especially on dunghills, or on those spots where dung has been thrown. The stipes, or stem, is from three to six inches in height, and two or three lines in diameter, pale yellowish, hollow, the tube being very small, and sometimes partly filled with a white pith; more or less crooked, somewhat incrassated towards the base, glutinous, furnished with a ring, and mostly dotted with black immediately beneath the pileus. The pileus is from half an inch to an inch and a half in breadth, of a pale reddish-orange, or straw colour, in the full grown ones exactly hemispherical, rarely becoming in large specimens plano-convex, very glutinous and smooth, hence the name *glutinosus* given to it by Curtis. The usual colour of the cap is reddish-orange, but when wet with rain it becomes browner and transparent, so that it sometimes appears as if striated. The flesh is thin and white. The lamellæ are numerous, fixed, horizontal, extending in a right line, or nearly so, from the margin of the pileus to the stipês, and beautifully mottled with the purplish black sporidia.

With regard to this species, it may not be improper to remark, that the poisonous qualities usually ascribed to it, are still somewhat problematical. Mr. Sowerby states, that it was the variety marked No. 1 on our Plate, which nearly proved fatal to a poor family in London, who were so indiscreet as to stew a quantity of it, gathered in Hyde Park, for breakfast. We cannot help thinking, however, with Dr. Greville, that the plant with the acuminate pileus, is a distinct species from the other figures on the same plate.



Agaricus bulbosus.

W. H. W.

W. H. W.

AGARICUS BULBOSUS.

*Bulbous stemmed Agaric.**Class XXIV. CRYPTOGRAMIA.—Order IV. FUNGI, Lin.**Nat. Ord. FUNGI, Link. GYMNOCARPI, Pers.*

SPEC. CHAR. *Pileus* obtusely umbonate, smooth, tawny, when dry testaceous. *Lamellæ* cinnamon coloured. *Stem* very thick, bulbous; veil white.

Syn.—Amanita. n. 2445. Hall Hist. v. 3. p. 174.

Cortinaria bulbosa. Gray's Nat. Arr. v. 1. p. 630.

Agaricus bulbosus. Sow. Fung. t. 130; Purt. Midl. Fl. 2. 636; Pers. Syn. Fung. p. 195; Fries. Syst. Mycol. 1. p. 214.

ONE of the common poisonous native Agarics, abounding in woods, in the autumnal months. It has a pungent odour, resembling that of horse-radish. The pileus is two or three inches broad, bright brown, or chestnut coloured, obtusely umbonate, thin at the margin, testaceous when dry, and brittle. The lamellæ are cinnamon-coloured, or tawny, three or four in a set, distant, and three or four lines broad, with rose-coloured sporidia. The stem is about four inches in height, solid, very thick, dullish red, bulbous, ovate, and in old specimens ferruginous at the base. The veil is annular, whitish, and fugacious. Withering's *A. bulbosus*, (*Bot. Arr. v. 4. p. 271.*) is a different plant.

On the continent a great many kinds of Fungi are used for culinary purposes. In this country very few are regarded by epicures as edible; but Dr. Greville* enumerates no fewer than twenty-six species, which grow abundantly in most parts of Britain, that may be eaten with safety. They are the following:—*Tuber cibarium*, or common Truffle; *T. moschatum*, and *T. album*, two analogous spe-

* *Memoirs of the Wernerian Natural History Society, v. iv. p. 399.*

cies; *Amanita cæsarea* and *aurantiaca*, the *Oronge* of the French, which is often confounded with *A. muscaria*, but may be distinguished from it by the colour of the gills, which in the former species are yellow; *Agaricus procerus*, *campestris*, *oreades*, *odorus*, *eburneus*, *ulmarius*, *ostreatus*, *violaceus*, *piperatus*, *acris*, and *deliciosus*; *Cantharellus cibarius*; *Boletus edulis*, *scaber*; *Fistulina hepatica*; *Hydnum repandum*; *Clavaria coralloides*, *cinerea*; *Morchella esculenta*; *Helvella mitra* and *leucophea*. Some of these, however, especially *piperatus* and *acris*, have been deemed unwholesome.

M. Orfila, in his “*Toxicologie Générale*,” mentions the following species as decidedly poisonous: *Amanita*, *muscaria*, *alba*, *citrina*, and *viridis*; the *Hypophyllum maculatum*, *albocitrinum*, *tricuspidatum*, *sanguineum*, *crux-militense*, *pudibundum*, and *pellitum*; the *Agaricus necator*, *acris*, *piperatus*, *pyrogalus*, *stipiticus*, *annularis*, and *urens*. To these may be added, the *A. semiglobatus*, *bulbosus*, and probably many others.

In the selection of unknown Fungi, colour has been regarded by many writers as of considerable importance. “*Quamobrem recte scribit Avicenna*,” says Matthioli, “*eos noscentes esse, qui nigri vel virides, vel in nigro-purpurascetes visuntur*.” Persoon remarks, that a pure yellow, or golden colour, especially in the lamellæ of Agarics, denotes a good quality. Dr. Greville says, many excellent species have a very pale, or nearly white pileus; but that some are brown. A vinous, red, and violet, is regarded as universally wholesome; but orange, red, and rose-colour, poisonous. According to Decandolle, all the Boleti are edible, except, 1st, coriaceous and ligneous species; 2nd, those whose stem is furnished with a collar, or annular veil; 3rd, those with an acrid taste; and 4th, those whose flesh turns to a blue colour on being cut. Whenever this last character is perceived in any plant of this order, it always denotes a poisonous property. All those species that have a pungent, or disagreeable smell, an astringent taste, or leave an unpleasant sensation on the tongue and palate, should be entirely rejected. Agarics growing in tufts and clusters from the trunks of trees, are almost universally to be avoided. “Fungi, especially Agarici and Boleti, should be gathered for the table before they arrive at their full age, as they frequently then become tough and insipid. The *hymenium*, or that part containing the fructification, should, when it consists of tubes, (as in the Boleti,) be invariably removed, as it is often noxious, when the rest of the plant is unexceptionable. When the hymenium consists of gills or lamellæ, (as in *Agaricus* and *Amanita*,) they need not be separated, if the plant be taken when quite young; but if the pileus, or cap, be expanded,

they must be removed before cooking." Many species that are innocent when the plant grows in dry ground, are deleterious when it grows in a wet situation. The same species may be eaten with impunity when young, but becomes noxious when old. In some constitutions, even the common esculent kinds prove deleterious, as evinced by their not unfrequent effects on one of a party, while the rest escape.

QUALITIES AND CHEMICAL PROPERTIES.—Mushrooms are of rapid growth and speedy decay. When they putrify, they give out an extremely unpleasant odour, and approach animal matter more closely than other vegetable substances. Braconnot, who, with M. Vauquelin, has analyzed a great number of species, distinguished the insoluble spongy portion which characterizes mushrooms by the name of *fungin*. It approaches woody fibre in its properties; but is sufficiently distinguishable by various characters, particularly by constituting a nourishing article of food, and being much less soluble in alkaline leys. Braconnot also ascertained the existence of two new acids in mushrooms. One of these is termed *boletic acid*, and consists of irregular four-sided prisms, of a white colour, and permanent in the air. The other acid, which constitutes a very general ingredient in mushrooms, is called *fungic acid*. Both may be obtained from the expressed juice of the *Boletus pseudo igniarius*, the latter also from *B. juglandis*, *Merulius cantharellus*, *Peziza nigra*, and *Phallus impudicus*. Proust has likewise discovered in them the benzoic acid, and phosphate of lime.

Amanita muscaria. This was examined by Vauquelin, who extracted from it an animal matter, insoluble in alcohol, osmazome, a fatty matter, muriate, phosphate, and sulphate of potash.

Agaricus bulbosus. Vauquelin obtained from this species, the two animal matters found in the *Amanita muscaria*, a fatty soft matter, of a yellow colour and acrid taste, and an acid salt, which is not a phosphate. The insoluble substance of this, and of the former species, yielded an acid when distilled.*

We have met with no analysis of the *Agaricus semiglobatus*.

POISONOUS EFFECTS.—The symptoms which generally arise from eating the noxious Fungi, are pains of the stomach, nausea, vomiting, and purging; sense of heat of the bowels, faintings, cramps of the lower extremities, convulsions, sometimes general, sometimes partial, and unquenchable thirst succeed: the pulse is small, hard, and very frequent. When these symptoms, after having continued a certain time, do not diminish in consequence of the remedies administered, vertigo, stupor, and delirium, affect some subjects, and are only interrupted by pains and convulsions. In others there is no drowsiness; the pains and convulsions exhaust the strength, faintings and cold sweats come on, and death puts a period to this series of suffering, after having been foreseen and announced by the patient himself, who has not lost his senses for a single moment.

Poisonous Fungi do not in general manifest their action till six or eight hours after they are eaten, and twelve or sixteen occasionally elapse. In cows and other cattle, they have been known to produce

* *Ann. de Chim.* lxxxv.

bloody urine, nauseous milk, swellings of the abdomen, inflammation of the intestines, obstructions, diarrhœas, and death. In sheep, they are said to bring on a scirrhus liver, a cough, general wasting, and dropsy.

1. *Amanita muscaria*. In the Toxicologie Générale of M. Orfila, several cases are detailed of the fatal effect of this species on the animal economy. Several French soldiers ate, at two leagues from Polosk, in Russia, mushrooms of the above kind. Four of them, of a robust constitution, who considered themselves proof against the consequences under which their feebler companions were beginning to suffer, refused obstinately to take an emetic. In the evening the following symptoms appeared: anxiety, sense of suffocation, ardent thirst, intense griping pains, a small and irregular pulse, universal cold sweats, changed expression of countenance, violet tint of the nose and lips, general trembling, fœtid evacuations. These symptoms becoming worse, they were carried to the hospital. Coldness and livid colour of the limbs, a dreadful delirium, and acute pains accompanied them to the last moment. One of them sunk a few hours after his admission into the hospital; the three others had the same fate in the course of the night. Haller relates that six persons of Lithuania perished at one time by eating the *A. muscaria*; and that in Kamtschatka it had driven others raving mad. The inhabitants of the latter country prepare a liquor from it, and from a species of *Epilobium*, which, taken in small quantities, inebriates. It has not, however, been clearly ascertained whether the species which grows in this country, and in the south of Europe, be the same as that which is found in Kamtschatka. The properties of this variety are exceedingly curious, and have been fully described in an Essay by Dr. Langsdorf,* quoted by Dr. Greville. The inhabitants of the north-eastern parts of Asia use it in the same manner as ardent spirits, or wine, to produce intoxication. These fungi are collected in the hottest months, and hung up by a string in the air to dry; some dry of themselves on the ground, and are said to be far more narcotic than those artificially preserved. Small deep-coloured specimens, thickly covered with warts, are also said to be more powerful than those of a larger size and paler colour.

The usual mode of taking this fungus, is to roll it up like a bolus, and swallow it without chewing, which the Kamtschadales say, would disorder the stomach. It is sometimes eaten fresh in soups and sauces, and then loses much of its intoxicating property; when steeped in the juice of the berries of the *Vaccinium uliginosum*, its effects are those of strong wine. One large, or two small fungi, is a common dose to produce a pleasant intoxication for a whole day, particularly if water be drank after it, which augments the narcotic principle. The desired effect comes on one or two hours after taking the fungus. Giddiness and drunkenness result from the fungus, in the same manner as from wine or spirits. Cheerful emotions of the mind are first produced, involuntary words and actions follow, and sometimes at last an entire loss of consciousness. It renders some

* *Annalen der Wetterauischen Gesellschaft für die gesammte Naturkunde.*

remarkably active, and proves highly stimulant to muscular exertion ; with too large a dose, violent spasmodic effects are produced.

So very exciting to the nervous system, in some individuals, is this fungus, that the effects are often very ludicrous. If a person under its influence wishes to step over a straw, or small stick, he takes a stride or a jump sufficient to clear the trunk of a tree ; a talkative person cannot keep secrets or silence ; and one fond of music is perpetually singing.

The most singular effect of the *Amanita* is the influence it possesses over the urine. It is said, that from time immemorial, the inhabitants have known that the fungus imparts an intoxicating quality to that secretion, which continues for a considerable time after taking it. For instance, a man moderately intoxicated to-day, will by the next morning have slept himself sober ; but (as is the custom) by taking a tea-cup of his urine, be more powerfully intoxicated than he was the preceding day by the fungus. The intoxicating property of the fungus is capable of being propagated ; for every one who partakes of it has his urine similarly affected. Thus, with a very few *Amanitas*, a party of drunkards may keep up their debauch for a week. Dr. Langsdorf mentions, that by means of the second person taking the urine of the first, the third that of the second, and so on, the intoxication may be propagated through five individuals.

Linneus says, that flies are killed by this fungus, when infused in milk, hence its name *muscarius* ; and the same author also tells that the expressed juice, rubbed on walls and bedsteads, effectually expels bugs. In the north of Europe, it is sometimes administered in doses of from ten to thirty grains, by the vulgar, in epilepsy, palsy, and as an application to foul ulcers. More recently, a tincture of it has been employed internally by M. Reinhard, for scaly affections of the skin, and in obstinate expectorations, both mucous and purulent. The dose is from thirty to forty drops in any proper vehicle.*

2. *Agaricus semiglobatus*. In vol. iii. of the "London Medical and Physical Journal," cases are detailed by Mr. E. Brande, in which the species was partaken of by several individuals of one family, all of whom were saved by energetic and well-directed treatment. In vol. xx. of the same work, is the subjoined account, by Mr. Parrott, of Mitcham, in which it will be seen that death occurred from eating this fungus in three instances, and very alarming symptoms were produced in others.

"The family, which partook of this poison, consisted of William Attwood, aged 45 years ; Eliza, his wife, 38 ; their daughters, viz. Mary, 14, Hannah, 11, Sarah, 7, Eliza, 5.

"On Monday, the 10th inst. 1808, all ate stewed champignons, at one o'clock, which stew was made in an iron vessel, and consisted of the articles already specified, with the addition of butter, flower, pepper, salt, and water. Each of these parties, Hannah excepted, was supposed to have eaten more than half a pint. Within ten minutes after they had eaten their meal, they felt their spirits exhilarated, and the eldest daughter said to her mother, 'How funny you

* *Mag. der Pharm.* Nov. 1823, p. 163.

look !' All the parties continued cheerful till about six o'clock, when having taken their tea, they were attacked with stupor, which was not of long continuance ; this was soon succeeded by severe pains in the bowels, accompanied with violent vomiting, and copious purging, which continued till the following afternoon, when the patients were alarmed, and requested my attendance. Under these symptoms, it appeared that the first step to be taken, was to get rid of the poison ; for which purpose, oily opening medicines were administered, with emollient clysters, and plentiful dilution with warm broth was recommended. This method of treatment appeared to promise success in the case of Mary, who had so far recovered on the following day, Wednesday, that she walked about a quarter of a mile from home ; in the evening, however, the symptoms returned. On Thursday evening she became convulsed, and died on Friday morning at two o'clock.

" Hannah only ate two spoonsful of the stew, as she did not like its flavour ; this girl recovered after a severe vomiting and purging.

" Eliza did not complain much of her sufferings, but became convulsed at the same time her sister Mary did, and died half an hour after her.

" Sarah never complained of pain in the head, but was continually suffering under extreme pain in the bowels, which was increased on pressure, but no tension existed. Clysters afforded her no relief, and she died on Saturday morning, in the same convulsed state as her sisters. Permission having been obtained to open one of the bodies, that of Sarah was examined, as she had suffered under the most excruciating pain in the bowels, but no appearance of disease was manifest in any of the abdominal viscera ; the stomach was empty, and also the whole of the alimentary canal. On Friday, the 14th, the vomiting still continuing in the father and mother, it was thought proper to administer small doses of opium,* but without effect ; the effervescing draught was then given, which succeeded, but the pain in the bowels was thereby so much increased, that both regretted having taken it. On the same night Mrs. Attwood miscarried—she was two months advanced in pregnancy ; but, with her husband, is now in a state of convalescence. During the progress of this unfortunate occurrence, the pulse in each of the patients was quickened, and varied from 100 to 120 in a minute, but was not sufficiently full to justify the use of the lancet ; the tongue was parched, and slightly streaked with white ; the tunicæ conjunctivæ were not inflamed, and the parties were all perfectly sensible ; the urine was secreted in very small quantity, but it was not high coloured.

" A dog which had partaken of the stew died on Wednesday night, apparently in great agonies."

3. *Agaricus bulbosus*.—In vol. xii. of the London Medical and Physical Journal, pages 387 and 512, Dr. Bardsly, of Manchester, narrates several cases in which very severe effects were produced by a fungus, which, according to Dr. Hull, was the *Agaricus bulbosus*.

" On the 29th of October, 1804," says Dr. B. " I was called upon at

* " In our opinions, considerable doses of solid opium should have been given long before this."—EDITORS.

six in the evening to visit Master S., aged 5 years, the son of a gentleman living near this town. His parents informed me that he went out to play in perfect health, after eating a moderate dinner, with a companion of nearly his own age, in the fields adjoining; and in about two hours was led home in a state of alarming illness. He seemed to stagger like a person intoxicated, and with odd gesticulations laboured to express his sufferings, but was unable to articulate a single syllable. When I saw the patient, which was probably about two hours after the seizure, he appeared partially delirious, and uttered faint and indistinct screams. His pulse was slow, and somewhat irregular. The pupils of both eyes were much dilated, and vision was evidently imperfect. He seemed very averse to lying down, and his restlessness and impatience led him to make frequent attempts to walk about the room, but without any fixed object or design. He was unable to answer any questions, or to express his feelings by words. Slight convulsive motions might be perceived in the legs and arms, which gradually extended to the muscles of the trunk, and produced irregular distortions of the whole body. The upper extremities began to swell, and assumed a livid colour; the abdomen felt hard and tumid." From the symptoms Dr. B. suspected the cause, but could not ascertain the fact at the time. Frictions, with the volatile liniment, were applied to the spine, and a stimulating enema administered. He was put into a hot bath at 100°, and kept in for ten minutes. The clyster was soon repeated, and purgative pills, composed of calomel and extract of jalap. Profuse sweating ensued, and was maintained by diluents of lemon whey, &c. A copious stool took place twenty minutes after the last clyster, and the patient, who was tranquillized by the bath, became much better. Soon after, he vomited an offensive greenish coloured fluid, and this was succeeded by a plentiful discharge from the bowels, but no vestiges of the fungus could be discovered in the dejections. An evident abatement of symptoms followed, the dilatation of pupils disappeared, the pulse became slower and firmer, he articulated with tolerable distinctness, but seemed like a person just roused from a long and deep sleep, unconscious of any thing that had happened. The bowels were kept in action during the night, and the next day, with the exception of debility and languor, the patient had recovered.

Upon strictly questioning him and his companion, it appeared that they had eaten of some fungi while in the fields, but the latter partook of so little that his symptoms were very mild. Dr. Bardsly further remarks, that had he been called at an earlier period, he should have ordered an emetic, but supposing that a sufficient time had elapsed for the poison to have passed into the bowels, he directed his efforts to procure a plentiful evacuation from them.

MORBID APPEARANCES.—The appearances observed on dissection are violet coloured spots on the skin over the whole body, very extensive and numerous; the abdomen is extremely bulky, the conjunctiva is injected, the pupil contracted, the stomach and intestines inflamed, and scattered over with gangrenous spots; sphacelus is present in some portions of this viscus, and the stomach and intestines are so contracted, that the canal of the latter is often obliterated. The œso-

phagus in one subject was inflamed and gangrenous; and in another there was *intus-susceptio* of the ileon. One individual alone has been known to have the intestines distended with excrementitious matter. *In none have the remains of the mushroom been found*; they had either been completely digested or evacuated. The lungs were inflamed and distended with black blood; congestion had also taken place in almost all the veins of the abdominal viscera, in the liver, spleen, and mysentery. Inflammation and gangrenous spots occur on the membranes of the brain, in its ventricles; on the pleura, lungs, diaphragm, mysentery, bladder, uterus, and were even observed on the foetus of a pregnant woman. The blood in this subject was extremely fluid; in others, it was almost coagulated. Extreme flexibility of the limbs was not a constant appearance.

TREATMENT.—Although the fungi have generally passed the stomach prior to the manifestation of alarming symptoms, it will be right to excite vomiting as speedily as possible, by a solution of sulphate of zinc or copper; evacuations from the bowels should be immediately produced by stimulating purgative clysters; and as soon as the stomach becomes settled, the intestines should be thoroughly emptied by means of castor or croton oil; perhaps a large dose of spirits of turpentine would be better than either. After the first evacuation, small, but repeated doses of ether, or ether and opium, should be given in almond emulsion; and water acidulated with vinegar, or other vegetable acids, may form the common drink. Other symptoms, subsequent to the effects of these poisons, must of course, be treated according to the general principles which will suggest themselves to every well-in-formed practitioner.

ABBREVIATIONS

OF

WORDS AND TITLES OF BOOKS EXPLAINED.

- Achar. Lichen. Univ.*—ACHARIUS (Erick). Lichenographia Universalis. 1 vol. 4to. Gottingen, 1810.
- Achar. Meth. Lich.*—ID. Methodus quâ omnes detectos Lichenes ad genera, &c. redigere tentavit. 1 vol. 8vo. Stockholm, 1803.
- Achar. Prodr.*—ID. Lichenographie Suecicæ Prodromus. 1 vol. 8vo. 1798.
- Acta Berol.*—Mémoires de l'Académie Royale des Sciences de Berlin. 4to. Berlin, 1770-1816.
- Acta Erud.*—Acta Eruditorum quæ Lipsiæ publicantur. 50 vols. 4to. 1682-1731.
- Acta Harlem.*—Verhandelingen uitgeeven door te Hollande Maatschappij der wetten schappen te Haarlem. 8vo. 1754, et seq.
- Acta Helvet.*—Acta Helvetica physico-mathematico-botanico-medica. 8 vols. 4to. Basil, 1757-1777.
- Acta Holm.*—Kongl. svenska vetenskaps akademis Handlingar. 8vo. Stockholm, 1739-1816.
- Acta Paris.*—Mémoires de l'Académie Royale des Sciences. 1 vol. 4to. 1666-1788.
- Acta Societ. Batav.*—Verhandelingen van het Bataviaasch Genootschap der Konstan an wetenschappen. 6 vols. 8vo. Rotterdam, 1779-1792.
- Acta Suec.*—Acta Literaria Suecica. 1 vol. 4to. Upsal, 1720-1724.
- Acta Upsal.*—Acta Literaria et Scientiarum Upsaliæ publicata. 8vo. 1720-1816.
- Ait. Hort. Kew.*—AITON (William). Hortus Kewensis, ed. 2d. 5 vols. 8vo. London, 1810.
- Allion. Ped.*—ALLIONI (Charles). Flora Pedemontana. 3 vols. folio, Turin. 1785.
- Alpin. Ægypt.*—ALPINUS (Prosper). De Plantis Ægypti liber. 4to. Venice, 1592.
- Alpin. Exot.*—ID. De Plantis exoticis libri duo. 4to. Venice, 1656.
- Amm. Ruth.*—AMMAN (John). Stirpium rariorum in Imperio Rutheno sponte provenientium Icones et Descriptiones. 4to. Petersburg, 1739.
- Amæn. Acad.*—Linnei Amœnitates Academicæ, seu Dissertationes antehac seorsim editæ. 10 vols. 8vo. Stockholm and Leipsic, 1749, et seq.
- Andrew's Repos.*—ANDREWS (Henry). The Botanist's Repository. 10 vols. 4to. London, 1797, &c.
- Ann. de Chim.*—Annales de Chimie, &c. 99 vols. 8vo. Paris, 1789-1829.
- Asiat. Res.*—Asiatic Researches, or the Transactions of the Society instituted in Bengal. 4to. Calcutta, 1788, &c.
- Aublet. Guia.*—AUBLET (Fusée). Histoire des Plantes, de la Guiane Française. 4 vols. 4to. London, 1773.
- Barrel. Ic.*—BARRELIER (James). Plantæ per Galliam, Hispaniam, et Italiam Observatæ, Iconibus æneis exhibitæ. 3 vols. fol. Paris, 1714.
- Batsch. Fung.*—BATSCH (Aug. John George Charles). Elenchus Fungorum. 4to. Halle, 1783-1789.
- Bauh. Hist.*—BAUHIN (John). Historia Plantarum Universalis. 3 vols. fol. Yverdun, 1650.
- Bauh. Pin.*—BAUHIN (Caspar). Pinax Theatri Botanici. 4to. Basil, 1671.
- Berg. Mat. Med.*—BERGIUS (Peter Jo-

- nas) *Materia Medica e Rengo Vegetabili*. 2 vols. 8vo. Stockholm, 1778.
- Berlin Mag.*—BERLINISCHER Magazin, oder gessammte schriften. 4 vols. 8vo. Berlin, 1765-1767.
- Bigel. Amer. Med. Bot.*—BIGELOW (Jacob). American Medical Botany. 3 vols. 4to. Boston, 1818.
- Blackw.*—BLACKWELL (Eliz.). A curious Herbal containing 600 cuts of the useful plants. 2 vols. fol. London, 1737.
- Bolt. Fung.*—BOLTON (James). A History of Funguses growing about Halifax. 4to. Huddersfield, 1788-1791.
- Bot. Mag.*—The Botanical Magazine. 8vo. 56 vols. London, 1787-1830.
- Bot. Reg.*—The Botanical Register. 8vo. 15 vols. London, 1815-1830.
- Browne Jam.*—BROWNE (Patrick). The Civil and Natural History of Jamaica. fol. London, 1756.
- Brotero Lusit.*—BROTERO (Felix Avelar). Phytographiæ Lusitaniæ selectior. fol. Lisbon, 1800.
- Bull. Champ.*—BULLIARD. Histoire des Champignons de la France. fol. Paris, 1798.
- Bull. Fr.* See *Fl. Franc.*
- Burm. Zeylan.*—BURMANN (John). The-saurus Zeylanicus. 4to. Amsterdam, 1737.
- Camer. Epit.*—CAMERARIUS (Joachim). De Plantis Epitome. 4to. Franckfort. 1586.
- Catesb. Carol.*—CATESBY (Mark). The Natural History of Carolina, Florida, &c. 2 vols. fol. London, 1741-1743.
- Clus. Exot.*—CLUSIUS (Charles). Exoticarum libri X. fol. Antwerp, 1605.
- Clus. Hist.*—ID. Rariorum Plantarum Historia. fol. Antwerp, 1601.
- Com. Gott.* Commentarii Societatis Regiæ Scientiarum Göttingensis. 4to. 1751-1816.
- Column. Phytob.*—COLUMNA (Fabius). Phytobassanos, 4to. Naples, 1592.
- Commel. Hort.*—COMMELYN (Caspar). Horti Medici Amstelodamensis Rariorum Plantarum descriptio et Icones. 2 vols. fol. Amsterdam, 1703.
- Cornut. Canad.*—CORNUTUS (Jacob). Canadensium Plantarum aliarumque nondum editarum Historia. 4to. Paris, 1635.
- Dale. Pharm.*—DALE (Samuel). Pharmacologia. 4to. London, 1737.
- Dalech. Hist.*—DALECHAMPS (James). Historia generalis Plantarum. 2 vols. fol. Lyons, 1587.
- Dalib. Paris.*—DALIBARD. Flora Parisiensis. 12mo. Paris, 1719.
- Decand. Astrag.*—DECANDOLLE (Augustus Pyramus). Astragalogia. 1 vol. fol. Paris, 1802.
- Decand. Pl. Grass.*—ID. Plantarum Historia succulentarum. fol. Paris, 1799-1803.
- Decand. Prodr.*—ID. Prodromus Systematis Naturalis Regni Vegetabilis. 2 vols. 8vo. Paris, 1824.
- Desfont. Fl.*—DESFONTAINES (René). Flora Atlantica. 2 vols. 4to. Paris, 1798.
- Dicks. Crypt.*—DICKSON (James). Plantarum Cryptogamicarum Britanniae Fasciculi. 3 vols. 4to. London, 1785-1793.
- Dill. Musc.*—DILLENIUS (John James). Historia Muscorum. 4to. Oxford, 1741.
- Diosc.*—Dioscoridis libri 8, Gr. et Lat. a Ruellio. 12mo. 1549.
- Dod. Pempt.*—DODONEUS (Rembert). Stirpium Historia Pemptades Sex. fol. Antwerp, 1616.
- Duham. Arbr.*—DUHAMEL DU MONCEAU (Henry Louis). Traite des Arbres et Arbustes qui se cultivent en France en pleine Terre. 2 vols. 4to. Paris, 1755.
- Ehrh. Pl. Off.*—EHRHART (Frederick). Plantæ Officinales, quas in usum studiorum Medicinæ, Chirurgiæ et Pharmaceutices collegit et exsicavit. fol. 60 decades. Hanover, 1785.
- Eng. Bot.*—SMITH (James Edward). English Botany; the figures by James Sowerby. 36 vols. 8vo. London. 1790-1814.
- Eph. Nat. Cur.*—Academiæ Naturæ Curiosorum Ephemerides, 4to. Franckfort, Jena, Leipsic, Nuremberg, or Vienna. 1670-1722.
- Esper. Icon. Fuc.*—ESPER (Eug. Jos. Christ.). Icones Fucorum Abbildungen der Tange. 4to. Nuremberg, 1797-1799.
- Ferr. Hesp.*—FERRARI (John Baptist). Hesperides sive de malorum aureorum culturâ et usu. fol. Rome, 1646.

- Fl. Brit.*—SMITH (James Edward). *Flora Britannica*. 3 vols. 8vo. London, 1800-1804.
- Fl. Dan.*—Icones Plantarum sponte nascentium in regnis Daniæ et Norvegiæ, &c. 9 vols. fol. Copenhagen, 1761-1829.
- Fl. Franc.*—BULLIARD. *Herbier de la France*. fol. Paris, 1786.
- Fl. Græc. Sibth.*—SIBTHORP (John). *Flora Græca* ed. J. E. Smith. 6 vols. fol. London, 1806-1829.
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Fr. French.

It. Italian.

Sp. Spanish.

Port. Portuguese.

Ger. German.

Dut. Dutch.

Swed. Swedish.

Dan. Danish.

Hind. Hindoostanie.

Tam. Tamool.

Chin. Chinese.

Arab. Arabic.

Sans. Sanscrit.

Cing. Cingalese.

Mal. Malay.

Jav. Javanese.

Tel. Telingoo.

Jap. Japanese.

Beng. Bengalie.

Coch. Chin. Cochin-China.

TABULAR INDEX

OF THE

LATIN NAMES.

GLOSSARY

OF

TERMS USED IN THE GENERIC AND SPECIFIC DESCRIPTIONS,

Acini, the small grains, or berries which compose the fruit of the Mulberry, Bramble, &c.

Aculeate, furnished with *aculei*, or prickles.

Acuminate, pointed; ending in an awl-shaped point.

Adnate, adhering to any thing; close pressed.

Aggregate, collected in a heap or head.

Aggregate flower, composed of several little flowers, or florets, on a common receptacle, and inclosed within one common calyx; as in the Dandelion.

Albumen, the substance which makes up the chief bulk of some seeds, as Grasses.

Alternate leaves or branches, rising singly, one above another.

Amentum. See *Catkin*.

Amplexicaul, clasping the stem. Ex. *Lactuca virosa*.

Annual, plants that live but one year.

Anther, a cellular body placed on the summit of the stamens, and containing the pollen.

Arillus, the proper exterior coat of a seed, that falls off spontaneously.

Arrow-shaped leaf. Ex. *Rumex Acetosa*.

Awl-shaped, gradually tapering to a sharp point.

Awn, a bristle-shaped appendage arising from the glume or chaff in corn and Grasses.

Barren flowers, are those that have no pistils.

Berry, a succulent fruit that contains many seeds; as in *Atropa Belladonna*.

Biennial, vegetating only two years.

Bilobed, having two lobes, or rounded margins.

Bipartite, divided into two parts.

Bipinnate, when two leaflets proceed laterally from one footstalk.

Brachiate, or four ranked, branching alternately in pairs.

Bractea, a floral leaf, attached close to the flower or its stalk.

Bulb, a fleshy mass, usually coated, having small radicles attached to its base; as in the Squill and Onion.

Caducous, soon falling off.

Calyx, the flower-cup; the coloured leaves which inclose the flower, or parts of fructification.

Capsule, a seed-vessel, which generally splits into several valves, and contains many seeds; as in the Poppy and Stramonium.

Carina, the keel, the lower petals of a papilionaceous corolla.

Catkin, (*amentum*,) a long simple stem, covered with scales, under which the flowers are concealed.

Cauline (*caulis*, the stem) belonging to the stem.

Ciliate, furnished with short parallel bristles.

Cluster, see *Raceme*.

Common Calyx, a calyx which contains many flowers; as in *Leontodon Tanacetum*.

Compound flower, when several florets are inclosed in one calyx, and having their anthers united into a cylinder; as in *Leontodon*, *Carduus*, *Tanacetum*.

Core, (*strobilus*), a catkin, the scales of which have become enlarged and woody, as in *Pinus*.

Cordate, heart-shaped.

Corolla, the coloured leaf, or leaves surrounding the interior parts of the flower, and inclosed by the calyx.

Corymb, a mode of inflorescence, when the flowers have each their proper footstalks of an equal height, forming a flat surface.

Cotyledon, a seed-lobe.

Crenate, notched ; when the margin of a leaf is cut into teeth that are rounded, and not directed towards either end of the leaf.

Culm, (*culmus*, straw) the proper stem of grasses.

Deciduous, leaves that fall off on the approach of winter.

Decurrent, running down; when the base of a sessile leaf extends itself downwards along the stem or branch, as *Centaurea benedicta*.

Dichotomous, forked, dividing in pairs.

Diœcious, bearing male and female flowers on different plants.

Disc, the central part of a compound radiate flower.

Drupe, a nut covered with a fleshy, succulent or cartilaginous coat ; as in the Plum, Almond, &c.

Elliptic leaf, oval ; of equal breadth at each end.

Emarginate, notched at the end.

Entire, without notches or teeth.

Epidermis, the external skin.

Exserted, standing forth, as when the stamens appear above the corolla.

Female flowers, where there are no stamens.

Fertile flowers, Where the stamens and pistils are situated in different flowers, that which has pistils is called the fertile flower, as bearing the seed.

Filament, the thread-like part of a stamen, supporting the anther.

Florets, little flowers.

Flower, is usually defined that part of a plant, which is destined for the production of the fruit and seeds.

Frond, the leaf of the Fern and Lichen tribe.

Fructification, the flowers and fruit.

Fungi, mushrooms. Ex. *Agaricus*.

Fusiform, spindle-shaped, tapering ; as in the Carrot.

Germen, the base of the pistil, the rudiment of the fruit.

Gibbous, swollen.

Gills (*lamellæ*), the thin plates on the under side of the *Fungi*.

Gland, a little tumour secreting a fluid.

Glaucous, of a sea-green colour.

Glume, the peculiar calyx of grasses, called the *husk*, or *chaff*, when dry.

Herbaceous, perennial plants, which annually perish down to the root.

Hernaphrodite flowers, where there are both stamens and pistils.

Hymenium, the membrane in mushrooms, in which the seeds are imbedded.

Imbricated, laid one over another, like the tiles on a house.

Involucella, the small leaves accompanying the partial umbel.

Involucrum, the small leaves at the base of an umbel.

Lacinia, segments or incisions.

Lamellæ. See *Gills*.

Lanceolate, spear-shaped ; attenuated at both extremities.

Leaflet, a diminutive of leaf ; put for the component leaf, in compound leaves.

Leaves, are generally membranous, pulpy, and vascular, sometimes very succulent, greenish bodies, produced on different parts of the stem.

Legume, a dry, elongated seed-vessel of two valves, to the margin of the under surface of which the seeds are attached.

Ligulate, shaped like a strap or ribbon ; as the florets of the Dandelion.

Limb, the upper expanded part of a monopetalous corolla.

Linear, equal in breadth throughout.

Male flowers, containing stamens, but no pistil.

Monœcious (*monœci*), having stamens and pistils in different flowers, but growing on the same plant.

Monopetalous, consisting of one petal.

Mucronate, (*mucronatum* or *Cuspidatum*) sharp-pointed; tipped with a rigid spine; as in *Pistacia Lentiscus*.

Nectary, that part of the corolla which either secretes the honey, or serves to protect various parts of the plant.

Nut, a seed covered with a hard shell, that does not separate into distinct valves.

Officinal, plants used in medicine, and kept in the shops.

Oblong, three or four times longer than broad.

Obovate, of the shape of an egg cut lengthwise, with the broad end uppermost.

Opposite, growing in opposite pairs.

Ovate, of the shape of an egg cut lengthwise.

Ovate-oblong, oblong egg-shaped.

Palmate, cut into several equal segments, leaving an entire space like the palm of the hand.

Panicle, a loose spike of flowers variously subdivided.

Papilionaceous, resembling a butterfly. Ex. *Dolichos*.

Pappus, the seed down; as in the *Dandelion*.

Peduncle, the flower-stalk, supporting the fructification only.

Pedicel, a partial flower-stalk.

Perennial, continuing several years.

Pericarpium, the seed-vessel.

Petal, the coloured leaf, or leaves of the corolla.

Petiole, a foot-stalk, or leaf-stalk.

Pileus, a hat, the broad part, in the *Agaric* tribe, which covers the fructification.

Pinnate leaf, a compound leaf, having a simple petiole, connecting two rows of leaflets.

Pistil, a small columnar body standing in the middle of the stamens, which is essential to fructification.

Pollen, the fine powder contained in the anther, and designed for the impregnation of the germen.

Pubescent, covered with hairs.

Raceme, consists of a number of petioled flowers, connected together by one common stalk; as a bunch of Grapes.

Radical, springing from the root.

Radius, the *Ray*, the marginal florets of a compound flower.

Ray, the flower-stalk of an umbel.

Receptacle, the base connecting the other parts of the fructification.

Rhomboid, or diamond-shaped. Ex. *Chenopodium olidum*.

Runcinate, or lion-toothed, cut into several transverse, acute segments, pointed backwards; as in *Leontodon Taraxacum*.

Scabrous, rough with tubercles.

Scape, a stalk bearing the flowers and fruit, but not the leaves.

Serrate, toothed like a saw.

Sessile, sitting close, without any foot-stalk.

Sheath, a prolongation of the leaf, which rolls itself around the stem, and forms a cylinder; as in all the Grasses.

Siliqua, a *Pod*, consisting of two valves, to the inner margins of both sutures of which the seeds are attached; as in *Sinapis*.

Sinuate, scolloped; as the leaf of the Oak.

Spadix, an elongated receptacle, inclosed in the spathe; as in *Arum*.

Spathe, (*spatha*) a kind of calyx, bursting horizontally in the form of a sheath. Ex. *Arum maculatum*.

Spike, where numerous florets sit on a simple flower-stalk; as in *Lavandula Spica*.

Spikelet, or *Spicule*, a partial spike, or subdivision of a spike.

Sporæ, the seeds of *Fungi*.

Stamen, an organ in flowers, commonly of a thread-like form, bearing the anther.

Stigma, the top of the pistil.

Stipes, the stem of a mushroom.

Stipula, or *Stipule*, a leafy appendage at the base of the foot-stalks, or leaves.

Strobile. See *Cone*.

Style, the middle part of the pistil connecting the stigma with the germen.

Tendrils (*cirrus*), or *Clasper*, a filiform slender body, by which a weak plant supports itself on other bodies; as the Vine.

Ternate, having three leaflets on one petiole.

Thallus, same as *Frond*.

Tomentose, downy.

Trifid, 3-cleft, or cloven into three parts.

Truncate, cut off in the end, by a transverse line.

Umbel, several flower-stalks of equal length, that rise from a common centre, like the sticks of an umbrella.

Valve, the outer covering of a seed-vessel, or the several pieces which compose it.

Verticillate Plants, having the flowers growing in a whorl.

Vexillum, the standard, the upper large petal of a papilionaceous flower.

Villous, covered with soft hairs.

Volva, the wrapper, the covering which surrounds the young Fungus, and bursting, forms a ring upon the stalk.
Ex. *Agaricus*.

Whorl, a mode of inflorescence, in which several flowers surround the stem or branch in a ring.

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TABULAR INDEX OF THE LATIN NAMES.

The following Table exhibits at one view the name, duration, and habit of each plant, the class and order to which it belongs in the Linnean system, the natural order, the time of flowering, native country, the parts used, its operation, medical properties and uses, and the volume in which the figure and description is given. The sign ♀ signifies that the plant is a shrub or tree; ♂ that it is a perennial; ☉ that it is an annual; ♂ that it is biennial.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		Linneus.	Jussieu.					
Acacia Catechu ♀ . . .	ii. 76.	Polygam. Monœc.	Leguminosæ.	June.	E. Indies.	Extract.	Astringent.	In diarrhoea, dysentery.
Acacia vera ♀ . . .	ii. 77.	—	—	July.	Africa.	Gum.	Demulcent.	Coughs, diarrhoeas.
Aconitum Napellus ♂ .	i. 28.	Polyand. Pentagyn.	Ranunculaceæ.	June, July.	Germany.	Leaves.	Narcotic, diuretic.	Rheumatism, scirrhus.
Acorus Calamus ♂ . .	i. 32.	Hexand. Monogyn.	Aroidæ.	June.	England.	Root.	Stomachic.	Dyspepsia, flatulent colic.
Æsculus Hippocastanum ♀.	ii. 68.	Heptand. Monogyn.	Acera.	May.	N. of Asia.	Bark.	Tonic.	Intermittent fevers.
Æthusa Cynapium ☉ . .	i. 8.	Pentand. Digyn.	Umbelliferæ.	June, July.	Britain.	Not used.	Acro-narcotic poison.	Not used medicinally.
Agaricus bulbosus . . .	iv. 166.	Cryptogam. Fungi.	Fungi.	- - -	—	—	As above.	As above.
Agaricus semiglobatus .	iv. 165.	—	—	- - -	—	—	—	—
Allium sativum ♂ . . .	iii. 111.	Hexand. Monogyn.	Asphodeli.	July.	Sicily.	Bulb.	Expectorant, anthelmintic.	Asthma, worms.
Aloe Socotrina ♂ . . .	iii. 110.	—	—	—	Africa.	Extract.	Cathartic, anthelmintic.	Dyspepsia, chlorosis, worms, &c.
Aloe vulgaris ♂ . . .	iii. 109.	—	—	May, June.	Levant.	—	As above.	As above.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Althæa officinalis 24 . .	ii. 51.	Monadelph. Polyand.	Fungi.	July, Sept.	Britain.	Leaves & Root.	Demulcent.	In coughs, nephritis.
Amanita muscaria . . .	iv. 163 & 164.	Cryptogam. Fungi.	Malvaceæ.	—	—	Pileus.	Acro-narcotic poison.	Not used medicinally.
Amygdalus communis 12 . .	i. 43.	Icosand. Monogyn.	Rosaceæ.	March, Apl.	Barbary.	Kernel.	Demulcent, sedative.	In coughs.
Amyris gileadensis 12 . .	iv. 157.	Octand. Monogyn.	Terebintaceæ.	—	Arabia.	Balsam.	Stimulant, expectorant.	Pulmonary complaints.
Anagallis arvensis ☉ . .	i. 16.	Pentand. Monogyn.	Lysimachiæ.	June, July.	Britain.	Not used.	Acrid, poisonous.	Not used medicinally.
Anchusa tinctoria 24 . .	iii. 122.	—	Boragineæ.	June, Oct.	S. of Europe.	Root.	Astringent.	To colour oils.
Anethum graveolens ♂ . .	iii. 137.	Pentand. Digyn.	Umbellifereæ.	June, July.	Britain.	Seeds.	Carminative.	Flatulent colic.
Angelica Archangelica ♂ . .	ii. 83.	—	—	June, Sept.	—	Root.	Tonic, stimulant.	Dyspepsia.
Anthemis nobilis 24 . .	i. 38.	Syngenes. Poly. S.	Corymbifereæ.	Aug. Sept.	—	Flowers.	Stomachic, emetic.	Dyspepsia, hysteria.
Anthemis Pyrethrum 24 . .	iii. 97.	—	—	June.	S. of Europe.	Root.	Sialagogue.	Toothache, dysphagia.
Arbutus Uva Ursi 12 . .	ii. 91.	Decand. Monogyn.	Ericæ.	—	Britain.	Leaves.	Astringent, tonic.	Calculus, catarrhus vesicæ.
Aristolochia Serpentaria 24 . .	iv. 180.	Gynand. Hexand.	Aristolochiæ.	May, June.	N. America.	Root.	Tonic, diaphoretic.	Dyspepsia, typhus.
Arnica montana 24 . .	iii. 123.	Syngenes. Polyg. S.	Corymbifereæ.	June, July.	Europe.	Flowers & root.	Narcotic, diaphoretic.	Paralysis, rheumatism,
Artemisia Absinthium 24 . .	ii. 58.	—	—	August.	Britain.	Leaves & tops.	Tonic, anthelmintic.	Dyspepsia, worms.
Artemisia maritima 24 . .	ii. 58.	—	—	—	—	Tops.	As above.	Same as above.
Artemisia Santonica 24 . .	ii. 58.	—	—	September.	Persia.	Tops.	Stimulant, anthelmintic.	Worms, chlorosis.
Arum maculatum 24 . .	i. 13.	Monœc. Polyand.	Aroidæ.	May.	Britain.	Recent root.	Stimulant, expectorant.	Rheumatism, asthma.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Asarum europæum ʒ . .	i. 23.	Dodecand. Monogyn.	Aristolochiæ.	May.	Britain.	Leaves.	Emetic; errhine.	In cephalic snuffs.
Astragalus creticus ℥ .	iv. 161.	Diadelph. Decand.	Leguminosæ.	—	Greece.	Gum.	Demulcent.	Coughs, diarrhæas.
Atropa Belladonna. ʒ .	i. 1.	Pentand. Monogyn.	Solanæ.	June, July.	Britain.	Leaves.	Narcotic.	Scirrhus, cancer, neuralgia.
Bonplandia trifoliata ℥ . .	iv. 149.	—	Simarubæ.	- - -	S. America.	Bark.	Tonic, stimulant.	Dyspepsia, dysentery.
Boswellia serrata ℥ . .	— 147.	—	Meliis.	- - -	E. Indies.	Gum-resin.	Stimulant.	Chiefly in plasters.
Bryonia dioica ʒ . . .	ii. 64.	Monœc. Pentand.	Cucurbitacæ.	May, Sept.	Britain.	Root.	Cathartic, diuretic.	Dropsies, mania.
Canella alba ℥	— 66.	Dodecand. Monogyn.	Meliacæ.	- - -	W. Indies.	Bark.	Stimulant, tonic.	Dyspepsia.
Capsicum annuum ☉ . .	i. 44.	Pentand. Monogyn.	Solanæ.	July, Aug.	Both Indies.	Seeds.	Stimulant, rubefacient.	Atonic gout, paralysis.
Carum Carui ♂	ii. 59.	Pentand. Digyn.	Umbellifera.	June.	Europe.	—	Carminative.	Dyspepsia, colic.
Cassia Fistula ℥ . . .	iv. 155.	Decand. Monogyn.	Leguminosæ.	May, June.	Both Indies.	Pulp.	Laxative.	Constipation.
Cassia Senna ☉ . . .	i. 30.	—	—	July, Aug.	Egypt.	Leaves.	Cathartic.	Constipation, dropsy.
Centaurea benedicta ☉ .	iii. 128.	Syngenes. Frust. F.	Cinarocephalæ.	June, Sept.	S. of Europe.	—	Tonic.	Dyspepsia, gout.
Cephaelis Ipecacuanha ʒ .	ii. 62.	Pentand. Monogyn.	Aggregatæ.	Dec. March.	Brasil.	Root.	Emetic, expectorant.	Fevers, asthma, dysentery.
Cetraria islandica ʒ . .	— 69.	Cryptogam. Algæ.	Lichenes, <i>Hoff.</i>	- - -	Britain.	Herb.	Nutritive, demulcent.	Coughs, phthisis.
Chelidonium majus ʒ .	— 86.	Polyand. Monogyn.	Papaveracæ.	May, June.	—	Juice.	Acrid, poisonous.	To destroy warts.
Chenopodium olidum ☉ .	iv. 176.	Pentand. Digyn.	Atriplices.	August.	—	Extract.	Antispasmodic, emmenagogue.	Amenorrhœa, hysteria, chlorosis.
Cicuta virosa ʒ	ii. 89.	—	Umbellifera.	—	—	Not used.	Acro-narcotic poison.	Not used medicinally.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Cinchona Condaminea \mathfrak{h}	iv. 183.	Pentand. Monogyn.	Rubiaceæ.	August.	Quito.	Bark.	Tonic, antiseptic, febrifuge.	In intermittent and continued fevers, cynanche maligna, sphacelus, and general debility.
— cordifolia \mathfrak{h} . .	— 185.	—	—	May, Sept.	Peru.	—	—	
— oblongifolia \mathfrak{h} . .	— 184.	—	—	May, July.	Quito.	—	—	
Citrus Aurantium \mathfrak{h} . .	i. 14.	Polyadel. Icosand.	Aurantii.	May, Aug.	India.	Rind.	Stomachic.	Dyspepsia.
— medica \mathfrak{h}	ii. 92.	—	—	—	Asia.	Rind, oil, juice.	Refrigerant, stomachic.	Fevers, scurvy; bark in dyspepsia.
Cocculus palmatus \mathfrak{A} . .	iv. 160.	Diœc. Hexand.	Menispermæ.	—	Africa.	Root.	Tonic, stomachic.	Dyspepsia, cholera.
Cochlearia Armoracia \odot .	iii. 114.	Tetradyn. Silicul.	Siliculosæ.	May.	Britain.	Root.	Stimulant, rubefacient.	Paralysis, rheumatism.
Coffea arabica \mathfrak{h}	iv. 182.	Pentand. Monogyn.	Rubiaceæ.	Aug. Oct.	Arabia.	Seeds.	Antispasmodic.	Asthma, &c.
Colchicum autumnale \mathfrak{A} .	ii. 70.	Hexand. Trigyn.	Junci.	September.	Britain.	Bulb.	Narcotic, diuretic.	Gout, rheumatism.
Conium maculatum \mathfrak{f} . . .	i. 13.	Pentand. Digyn.	Umbelliferæ.	June, July.	—	Leaves.	Narcotic.	Cancer, scrofula.
Convolvulus Jalapa \mathfrak{h} .	— 47.	Pentand. Monogyn.	Convolvuli.	Aug. Sept.	Mexico.	Root.	Cathartic, hydragogue.	Dropsy, worms.
— Scammonia \mathfrak{h}	ii. 60.	—	—	—	Syria.	Gum-resin.	As above.	As above.
— sepium \mathfrak{A}	i. 2.	—	—	July Aug.	Britain.	Extract.	—	—
Copaifera officinalis \mathfrak{h} . .	iv. 158.	Decand. Monogyn.	Leguminosæ.	—	S. America.	Balsam.	Stimulant, diuretic.	Gonorrhœa, fluor albus.
Coriandrum sativum \odot .	ii. 94.	Pentand. Digyn.	Umbelliferæ.	June.	Britain ?	Seeds.	Carminative.	Flatulent colic.
Crocus sativus \mathfrak{A} , . . .	iii. 101.	Triand. Monogyn.	Irides.	October.	—	Stigmas.	Stimulant.	Chiefly used for colouring.
Croton Eleuteria \mathfrak{h} . . .	iv. 150.	Monœc. Monadel.	Euphorbiæ.	—	Bahamas.	Bark.	Stimulant, stomachic.	Dyspepsia, colic, dysentery.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Croton Tiglium ℥ . .	i. 4.	Monœc. Monodel.	Euphorbiæ.	- - -	Moluccas.	Oil.	Drastic, cathartic.	In apoplexy, mania.
Cucumis Colocynthis ⊙ .	iii. 138.	Monœc. Syngenes.	Cucurbitaceæ.	May, Aug.	Cape of Good Hope.	Pulp.	Drastic, cathartic.	Dropsy, mania.
Curcuma Zedoaria ℥ . .	— 107.	Monand. Monogyn.	Caneæ.	- - -	Ceylon.	Root.	Carminative, tonic.	Dyspepsia, colic.
Daphne Mezereum ℥ . .	ii. 65.	Octand. Monogyn.	Thymelææ.	March.	Britain.	Bark of the root.	Diaphoretic.	Rheumatism, lepra.
Datura Stramonium ⊙ .	i. 6.	Pentand. Monogyn.	Solaneæ.	July.	N. America.	Herb.	Narcotic, antispasmodic.	Asthma, mauia, epilepsy.
Daucus Carota ♂ . . .	ii. 56.	Pentand. Digyn.	Umbelliferæ.	June, July.	Britain.	Root & seeds.	Antiseptic, diuretic.	As a cataplasm to ill-conditioned ulcers.
Delphinium Staphisagria ♂	— 55.	Polyand. Trigyn.	Ranunculaceæ.	April, Aug.	Greece.	Seeds.	Violently emetic, &c.	To destroy pediculi.
Digitalis purpurea ♂ . .	i. 18.	Didynam. Angiosp.	Scrophulariæ.	June, July.	Britain.	Leaves.	Sedative, diuretic.	Phthisis, dropsies.
Diosma crenata ℥ . . .	iii. 121.	Pentand. Monogyn.	Rutaceæ.	August.	Cape of Good Hope.	—	Sudorific, diuretic.	Catarrhus vesicæ.
Dolichos pruriens ℥ . .	iv. 179.	Diadelph. Decand.	Leguminosæ.	Sept. Mar.	Both Indies.	Hairs of the pods.	Anthelmintic.	Worms.
Dorstenia Contrayerva ℥	iii. 155.	Monœc. Diand.	Urticææ.	May, Aug.	S. America.	Roots.	Stimulant, sudorific.	Typhus, dysentery.
Dryobalanops Camphora ℥	iv. 170.	Polyand. Monogyn.	Guttiferæ.	- - -	Sumatra.	Camphor.	Narcotic, diaphoretic.	Typhus, variola, gangrene.
Eryngium maritimum ℥	— 143.	Pentand. Digyn.	Umbelliferæ.	July, Aug.	Britain.	Roots.	Aperient, aphrodisiac?	Probably inert.
Erythraea Centaurium ℥ .	iii. 118.	Pentand. Monogyn.	Gentianæ.	—	—	Herb.	Stomachic, tonic.	Dyspepsia, intermit-tents.
Eugenia caryophyllata ℥	ii. 95.	Icosand. Monogyn.	Myrti.	June, Jan.	Moluccas.	Flower buds.	Stimulant.	Dyspepsia, atonic gout.
Euphorbia officinarum ℥	iii. 142.	Dodecand. Trigyn.	Euphorbiæ.	June, July.	Africa.	Gum-resin.	Errhine.	Amaurosis, lethargy.
Ferula persica ℥ . . .	iv. 169.	Pentand. Digyn.	Umbelliferæ.	June.	Persia.	—	Antispasmodic.	Hysteria, dyspnœa, worms.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Ficus Carica ℥	iv. 154.	Pologyn. Triœc.	Urticæ.	June, July.	Asia.	Fruit.	Nutritive, demulcent.	In <i>Decoction</i> in coughs.
Fraxinus Ornus ℥ . . .	ii. 53.	Pologyn. Diœc.	Jasmineæ.	May.	Italy.	Manna.	Laxative.	Constipation in children
Fucus Helminthocortos ʒ .	iii. 108.	Cryptogam. Algæ.	Algæ.	- - -	Britain.	Herb.	Anthelmintic?	In worms.
— vesiculosus ʒ . . .	— —	—	—	Mar. April.	—	Fruit.	Discutient.	Scrofulous swellings.
Garcinia Cambogia ℥ . .	iv. 181.	Dodecand. Monog.	Guttiferæ.	March.	Malabar.	Gum-resin.	Cathartic, hydragogue.	Dropsy, tænia.
Gentiana lutea ʒ	iii. 132.	Pentand. Digyn.	Gentianeæ.	June, July.	Germany.	Root.	Stomachic, tonic.	Dyspepsia.
Geoffroya inermis ℥ . . .	iv. 144.	Diadelph. Decand	Leguminosæ.	- - -	Jamaica.	Bark.	Anthelmintic.	In worms.
Geum urbanum ʒ	i. 36.	Icosand. Polygyn.	Rosaceæ.	May, Aug.	Britain.	Root.	Astringent, tonic.	Dysentery, general debility.
Glycyrrhiza glabra ℥ . . .	iii. 134.	Diadelph. Decand.	Leguminosæ.	August.	S. of Europe.	—	Demulcent.	Coughs, hoarsenesses.
Gratiola officinalis ℥ . . .	i. 33.	Diand. Monogyn.	Personatæ.	June, July.	—	Herb.	Anthelmintic, diuretic.	Worms; dropsy.
Guaiacum officinale ℥ . .	ii. 90.	Decand. Monogyn.	Rotaceæ.	June, Aug.	Jamaica.	Wood & resin.	Stimulant, diaphoretic.	Chronic rheumatism, syphilis.
Helleborus foetidus ʒ . . .	i. 21.	Polyand. Pologyn.	Ranunculaceæ.	Mar. April.	Britain.	Root.	Cathartic, anthelmintic.	In worms.
— niger ʒ	— 11.	—	—	Jan. Mar.	Austria.	—	Cathartic, emmenagogue.	Mania, dropsy, amenorrhœa.
— Orientalis ʒ	ii. 87.	—	—	- - -	Greece.	—	As above.	As above.
Humulus Lupulus ʒ . . .	i. 41.	Pentand. Diœc.	Urticæ.	July.	Britain.	Strobiles.	Narcotic, diuretic.	Gout, rheumatism.
Hyoscyamus niger ♂	— 9.	Pentand. Monogyn.	Luridæ.	—	—	Leaves.	Narcotic.	Epilepsy, hysteria, scirrhus.
Inula Helenium ʒ	ii. 49.	Syngenes. Pologyn.	Corymbifera.	July, Aug.	—	—	Tonic, diuretic.	Dyspepsia, dropsies.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Iris florentina 24 . . .	i. 27.	Triand. Monogyn.	Iridæ.	May, June.	S. of Europe.	Fresh root.	Cathartic.	In dropsies.
Juniperus communis h ₂ .	iv. 141.	Dicæc. Monadel.	Coniferæ.	May.	Britain.	Berries.	Diuretic, carminative.	Dropsies, cutaneous diseases.
Krameria triandra h ₂ . .	ii. 72.	Tetrand. Monogyn.	Polygaleæ.	----	S. America.	Root.	Astringent, tonic.	Dysentery, dyspepsia.
Lactuca virosa ♂ . . .	i. 12.	Syngenes. Polygyn.	Cichoraceæ.	Aug. Sept.	Britain.	Leaves.	Narcotic, diaphoretic.	Coughs, phthisis.
Laurus Cinnamomum h ₂ .	iii. 127.	Enneand. Monogyn.	Holoraceæ.	Jan. Feb.	Ceylon.	Bark and Flower buds.	Stimulant, tonic.	Dyspepsia, diarrhœa.
—— nobilis h ₂ . . .	— 125.	——	——	April, May.	S. of Europe.	Berries.	Carminative, narcotic.	Flatulent colic, hysteria.
—— Sassafras h ₂ . . .	— 126.	——	——	May, June.	N. America.	Wood, bark.	Diaphoretic, diuretic.	Chr. rheumatism, cutaneous diseases.
Lavandula Spica h ₂ . .	i. 40.	Didyn. Gymnosp.	Labiata.	July, Sept.	S. of Europe.	Flowers.	Stimulant.	Chiefly as a perfume.
Leontodon Taraxacum 24 .	— 5.	Syngenes. Polyg. Æq.	Cichoraceæ.	April, July.	Britain.	Root & Leaves.	Aperient, diuretic.	Chr. hepatitis, dropsy, jaundice.
Linum catharticum ⊙ . .	ii. 61.	Pentand. Pentagyn.	Caryophylleæ.	June, Aug.	——	Herb.	Cathartic.	Constipation.
—— usitatissimum ⊙ . .	— —	——	——	July.	——	Seeds and oil.	Demulcent.	In pulmonary complaints.
Lolium temulentum ⊙ . .	i. 3.	Triand. Trigyn.	Gramina.	——	——	Not used.	Acro-narcotic poison.	Not used medicinally.
Lythrum Salicaria 24 . .	iv. 146.	Dodecand. Monog.	Salicariæ.	July, Aug.	——	Herb.	Astringent, tonic.	Diarrhœa, dysentery.
Marrubium vulgare 24 . .	iii. 135.	Didyn. Gymnosp.	Labiata.	June, Sept.	——	Leaves.	Tonic, laxative.	Asthma, hysteria.
Matonia Cardamomum 24 .	— 106.	Monand. Monogyn.	Cannæ.	April, May.	Malabar.	Seeds.	Carminative, stomachic.	Flatulent colic.
Melaleuca Cajuputi h ₂ . .	ii. 84.	Polyadel. Icosand.	Myrti.	----	Amboyna.	Oil.	Stimulant, diaphoretic.	Hysteria, paralysis.
Mentha piperita 24 . . .	i. 45.	Didyn. Gymnosp.	Labiata.	Aug. Sept.	Britain.	Leaves.	Stomachic, carminative.	Flatulence, cramp of the stomach.

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		Linneus.	Jussieu.					
Mentha Pulegium 24 . . .	i. 45.	Didyn. Gymnosp.	Labiatae.	Sept.	Britain.	Herb.	Stomachic, carminative.	In flatulent colic, hysteria.
— viridis 24 . . .	—	—	—	August.	—	—	Stimulant, diaphoretic.	Flatulent colic, anorexia.
Menyanthes trifoliata 24 .	ii. 85.	Pentand. Monogyn.	Gentianeae.	June, July.	—	Leaves.	Tonic, diuretic.	Intermittents, dyspepsia, herpes.
Mercenialis perennis 24 .	— 78.	Dicec. Enneand.	Euphorbiae.	April, May.	—	—	Acro-narcotic poison.	Not used medicinally.
Momordica Elaterium 24 .	i. 34.	Monœc. Monadel.	Cucurbitaceae.	June, July.	S. of Europe.	Insp. Juice.	Cathartic, hydragogue.	Dropsies.
Morus nigra 12	— 39.	Monœc. Tetrand.	Urticæ.	June.	Italy.	Fruit.	Refrigerent, laxative.	Inflammatory fevers.
Myristica moschata 12 . .	iii. 104.	Dicec. Monadel.	Lauri.	— — —	Moluccas.	Fruit.	Stimulant, narcotic.	Vomiting, diarrhœa.
Myroxylon peruiferum 12	— 102.	Decand. Monogyn.	Leguminosæ.	Aug. Oct.	Mexico.	Balsam.	Stimulant, expectorant.	Chronic asthma, gleet.
Myrtus Pimenta 12 . . .	— 124.	Icosand. Monogyn.	Myrti.	May, June.	W. Indies.	Berries.	Aromatic, stimulant.	Chiefly as a condiment.
Nicotiana Tabacum ☉ . .	i. 37.	Pentand. Monogyn.	Solanæ.	July, Sept.	N. America.	Leaves.	Sedative, diuretic, errhine.	Hernia, dropsy.
Oenanthe crocata 24 . . .	— 35.	Pentand. Digyn.	Umbelliferae.	July.	Britain.	— — — — —	Acrid, poisonous.	Not used medicinally.
Olea europæa 12	— 14.	Diand. Monogyn.	Jasmineae.	—	S. of Europe.	Oil.	Demulcent, laxative,	Catarrhs, acrid poisons.
Origanum vulgare 24 . . .	iii. 131.	Didyn. Gymnosp.	Labiatae.	July, Aug.	Britain.	Leaves.	Stimulant, stomachic.	As a snuff in cephalalgia.
Oxalis Acetosella 24 . . .	ii. 63.	Decand. Pentagyn.	Geraniæ.	April.	—	Herb.	Refrigerant.	In febrile complaints
Papaver Rhœas ☉	i. 31.	Polyand. Monogyn.	Papaveraceae.	June, July.	—	Petals.	Laxative ?	To impart a red colour.
— somniferum ☉ . . .	iv. 159.	—	—	—	—	Capsules. (opium.)	Anodyne, stimulant, sedative.	To relieve pain, &c.
Paris quadrifolia 24 . . .	i. 19.	Octand. Tetragn.	Asparagi.	May.	—	— — — — —	Acro-narcotic poison.	Not used medicinally.

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		<i>Linneus.</i>	<i>Jussieu.</i>					
Pastinaca Opopanax 24 .	iii. 98.	Pentand. Digyn.	Umbelliferae.	July.	S. of Europe.	Gum-resin.	Antispasmodic.	In hysteria, chlorosis.
Phellandrium aquatum ♂	i. 10.	—	—	June, July.	Britain.	Seeds.	—	—
Pimpinella Anisum ⊙ . .	iv. 156.	—	—	—	Egypt.	Seeds.	Carminative.	Dyspepsia, colic.
Pinus Abies h	ii. 75.	Monœc. Monadel.	Coniferae.	April.	N. of Europe.	Resin.	Rubefacient.	Catarrh, pertussis, phthisis.
— Balsamea h	— 74.	—	—	May.	N. America.	Balsam.	Stimulant, diuretic.	Leucorrhœa, gleet.
— sylvestris h	— 73.	—	—	—	Britain.	Turpentine, resin, tar.	As above, anthelmintic.	Rheumatism, tape-worm.
Piper Cubeba h	iv. 175.	Diand. Trigyn.	Urticae.	—	Java.	Dried fruit.	Stimulant, cathartic.	Gonorrhœa.
— nigrum h	— 174.	—	—	—	E. Indies.	Fruit.	Stimulant, carminative.	Singultus, paralysis.
Pistacia Lentiscus h . .	iii. 130.	Diœc. Pentand.	Terebintaceae.	April.	S. of Europe.	Mastic.	Stimulant, diuretic.	Chronic coughs, gleet.
— Terebinthus h . .	— 129.	—	—	May, June.	—	Turpentine.	As above, cathartic.	Rheumatism, catarrhus vesicæ.
Polygala Senega h . . .	— 103.	Diadelph. Octand.	Pedicularæ.	June, Aug.	N. America.	Root.	Sudorific, expectorant.	Rheumatism, asthma.
Polygonum Bistorta 24 .	i. 47.	Octand. Trigyn.	Polygonæ.	August.	Britain.	—	Astringent, tonic.	Chr. dysentery, and diarrhœa.
Prunus Lauro-cerasus h .	iii. 117.	Icosand. Monogyn.	Rosaceæ.	April, May.	Levant.	Leaves.	Sedative, antispasmodic.	Coughs, dyspepsia, angina pectoris.
Pterocarpus erinaceus h .	iv. 168.	Diadelph. Decand.	Leguminosæ.	December.	Africa.	Kino.	Astringent.	Diarrhœa, hæmorrhagies.
Punica Granatum h . .	ii. 57.	Icosand. Monogyn.	Myrti.	July, Sept.	S. of Europe.	Bark and Flowers.	—	Diarrhœa, dysentery.
Pyrola umbellata 24 . .	— 93.	Decand. Monogyn.	Ericæ.	June.	N. America.	Herb.	Tonic, diuretic.	Acute rheumatism, dropsy.
Pyrus Cydonia h	iii. 115.	Icosand. Pentagyn.	Rosaceæ.	May, June.	Germany.	Seeds.	Demulcent.	Aphthæ, coughs.

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		<i>Linneus.</i>	<i>Jussieu.</i>					
Quassia amara ℥ . . .	iv. 172.	Decand. Monogyn.	Magnol.æ.	July.	Surinam.	Wood.	Tonic, stomachic	In bilious fever, hysteria, gout.
— excelsa ℥ . . .	— 173.	—	—	Oct. Nov.	Jamaica.	—	As above.	As above.
— Simaruba ℥ . . .	— 171.	—	—	Nov. Dec.	S. America.	Bark & Wood.	Tonic.	As above; dyspepsia.
Quercus infectoria ℥ . . .	— 152.	Monœc. Polyand.	Amentaceæ.	— — —	Asia.	The Galls.	Astringent.	Intestinal hæmorrhagies, piles.
— Robur ℥ . . .	— 151.	—	—	April.	Britain.	Bark.	Astringent, tonic.	Intermittents, fluor albus.
Ranunculus acris ℥ . . .	ii. 82.	Polyand. Pologyn.	Ranunculaceæ.	June, July.	—	Leaves.	Rubefacient, epispastic.	As counter-irritants.
— Flammula ℥ . . .	— —	—	—	— Aug.	—	Fresh Herb.	As above.	The same as R. acris.
Rhamnus catharticus ℥ . . .	iii. 119.	Pentand. Monogyn.	Rhamni.	May.	—	Berries.	Violently cathartic.	Dropsies, worms.
Rheum palmatum ℥ . . .	i. 25.	Enneand. Monog.	Polygonææ.	—	Tartary.	Root.	Cathartic, astringent.	Constipation.
— undulatum ℥ . . .	iv. 177.	—	—	—	China.	—	As above.	As above.
Rhododendron chrysanthum ℥	ii. 80.	Decand. Monogyn.	Rhododendra.	June, July.	Siberia.	Leaves.	Stimulant, narcotic.	Rheumatism, gout.
Rhus toxicodendron ℥ . . .	iv. 167.	Pentand. Trigyn.	Terebintaceæ.	—	N. America.	—	As above.	Paralysis, herpes.
Ricinus communis ☉ . . .	ii. 50.	Monœc. Monadel.	Euphorbiæ.	August.	Both Indies.	Seeds & Oil.	Cathartic.	Constipation.
Roccella tinctoria ℥ . . .	— 69.	Cryptogam. Algæ.	Lichenes, <i>Hoff.</i>	— — —	Britain.	Herb.	— — — —	Phthisis, and for preparing <i>Litmus</i> .
Rosa canina ℥	iii. 100.	Icosand. Pologyn.	Rosaceæ.	June.	—	Pulp.	Laxative.	For making the Confection.
— gallica ℥	— 99.	—	—	June, July.	S. of Europe.	Petals.	Astringent.	As a vehicle; and in diarrhoea.
Rosmarinus officinalis ℥ . . .	i. 24.	Diand. Monogyn.	Labiata.	Feb. Mar.	—	Tops.	Stimulant.	Nervous headaches, chlorosis.

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		<i>Linneus.</i>	<i>Jussieu.</i>					
Rumex Hydrolapathum 2℥.	iii. 133.	Hexand. Trigyn.	Polygonæ.	July, Aug.	Britain.	Root.	Astringent.	In ichthyosis, lepra.
Ruta graveolens ℥ . . .	ii. 71.	Decand. Monogyn.	Rutaceæ.	June, Sept.	S. of Europe.	Leaves.	Stimulant, antispasmodic.	Hysteria, convulsions.
Saccharum officinarum 2℥	iv. 148.	Triand. Digyn.	Gramina.	- - - -	E. Indies.	Sugar.	Laxative; escharotic.	Antidote for verdigris.
Salix Russelliana ℥ . .	iii. 139.	Diœc. Diand.	Amentaceæ.	April, May.	Britain.	Bark.	Tonic, astringent.	Intermittents; general debility.
Sambucus nigra ℥ . . .	ii. 79.	Pentand. Trigyn.	Caprifoliæ.	July.	—	Flowers, berries and bark.	Bark; cathartic.	Dropsy, hæmorrhoids.
Scilla maritima 2℥ . . .	iv. 153.	Hexand. Monogyn.	Asphodeli.	Apr. July,	S. of Europe.	Bulb.	Diuretic, expectorant.	Asthma, pertussis, dropsy.
Secale cereale ♂	iii. 113.	Triand. Digyn.	Gramina.	July.	Crete?	Spur, or Ergot.	Stimulant; septic.	To accelerate parturition.
Secale cornutum.								
Sinapis alba ♂	i. 42.	Tetradyn. Siliq.	Cruciferae.	June.	Britain.	Seeds.	Stimulant; emetic; rubefacient.	Dyspepsia, chlorosis, apoplexy.
— nigra ♂								
Smilax Sarsaparilla ℥ . .	iv. 162.	Diœc. Hexand.	Asparagi.	July, Aug.	S. America.	Root.	Demulcent, alterative.	Syphilis, elephantiasis.
Solanum Dulcamara ℥ .	i. 17.	Pentand. Monogyn.	Solanæ.	June, Aug.	Britain.	Stalks.	Narcotic, sudorific.	Lepra, asthma.
Solidago Virgaurea 2℥ .	iii. 105.	Syngenes. Polyg. S.	Corymbiferae.	July, Sept.	—	Flowers and leaves.	Astringent, tonic.	Chr. dysentery, urinary calculus.
Spartium scoparium ℥ .	ii. 67.	Diadelph. Decand.	Leguminosæ.	May, June.	—	Tops & seeds.	Diuretic; emetic.	Dropsies.
Spigelia marilandica 2℥ .	i. 7.	Pentand. Monogyn.	Gentianeæ.	July.	N. America.	Root.	Anthelmintic.	Worms.
Stychnos Nux-vomica 2℥ .	ii. 52.	— — — —	Luridæ.	- - - -	India.	Seeds.	Tonic; poisonous.	Dyspepsia; paralysis.
Styrax benzoin ℥ . . .	iii. 112.	Decand. Monogyn.	Guaiaicinæ.	- - - -	Sumatra.	Balsam.	Expectorant?	Asthma, and for preparing the acid.

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		<i>Linneus.</i>	<i>Jussieu.</i>					
Styrax officinale ℥ . . .	i. 47.	Decand. Monogyn.	Guaiacinae.	---	Italy.	Balsam.	Stimulant.	In chr. catarrh, asthma.
Swietenia febrifuga ℥ . .	ii. 81.	-----	Meliaceae.	July.	E. Indies.	Bark.	Astringent, tonic.	Intermittent fevers.
Tamarindus indica ℥ . .	— 88.	Monadel. Triand.	Leguminosæ.	June, July.	Both Indies.	Preser. fruit.	Refrigerant, laxative.	Inflammatory fevers.
Tanacetum vulgare ℥ . .	iii. 116.	Syngenes. Polyg. S.	Corymbiferæ.	July, Aug.	Britain.	Leaves.	Tonic, anthelmintic.	Hysteria, gout, worms.
Tormentilla erecta ℥ . .	i. 26.	Icosand. Polygn.	Rosaceæ.	June, July.	---	Root.	Astringent.	Diarrhoea in phthisis.
Triticum hybernum ☉ .	iii. 113.	Triand. Digyn.	Gramina.	July, Aug.	Asia.	Starch.	Demulcent.	Dysentery, tenesmus.
Tussilago Farfara ℥ . .	i. 20.	Syngenes, Polyg. S.	Corymbiferæ.	March, Apr.	Britain.	Leaves.	Demulcent.	Coughs; cutaneous diseases.
Valeriana officinalis ℥ . .	ii. 54.	Triand. Monogyn.	Dipsaceæ.	June.	---	Roots.	Antispasmodic.	Epilepsy, hysteria.
Veratrum album ℥ . . .	iii. 136.	Polygam. Monœc.	Junci.	June, Aug.	Europe.	Root.	Emetic; errhine.	Mania, apoplexy; seasickness.
Viola odorata ℥	i. 29.	Pentand. Monogyn.	Cysti.	March, Apr.	Britain.	Recent flower.	Slightly laxative.	As a test of acids.
Vitis vinifera ℥	iii. 140.	-----	Vitis.	May, June.	Greece.	Raisins, wine.	Laxative; cordial.	In typhus, &c.
Ulmus campestris ℥ . .	— 120.	Pentand. Digyn.	Amentaceæ.	April.	Britain.	Bark.	Tonic; alterative.	Chronic cutaneous diseases.
Wintera aromatica ℥ . .	iv. 178.	Polyand. Trigyn.	Magnolîæ.	---	Terra del Fuego.	Bark.	Tonic; carminative.	Colic, dyspepsia.
Zingiber officinale ℥ . .	iii. 96.	Monand. Monogyn.	Cannæ.	Sept.	E. Indies.	Root.	Stimulant, carminative.	Colic, dyspepsia, gout.

